NATURE MAGAZINE

V. 1927

35 CENTS

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also

The Wild Life Sanctuary—by Dallas Lore Sharp

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BELOW is a cartoon by William Walter submitted in the amateur class of the recent American Nature Association Outdoor Good Manners Cartoon Contest. It sets forth graphically the threat that confronts the Old Man of the Mountain in the beautiful Franconia Notch of New Hampshire, as described in the October issue of Nature Magazine. All information relative to the progress of the movement to save the lovely Notch can be obtained from the Society for the Protection of New Hampshire Forests, 4 Joy Street, Boston, Massachusetts.

* * *

After a successful and adventurous trip, the American Nature Association's Expedition to Glacier National Park has returned with many spoils in experiences and pictures. The first article on the trip will begin in the January issue of Nature Magazine, owing to the work of getting the material into shape. We will not say more about the forthcoming series beyond reminding you that Mr. Pack and Mr. Finley had their motion picture and still cameras along, and Mr. Horsfall was well equipped with paints for his inimitable color painting. You can draw your own conclusions about what is to come.

* * *

The American Tree Association's Forestry Cartoon Contest is still under way. Information may be obtained from the Association at 1214 16th Street, N. W., Washington, D. C.

NATURE MAGAZINE is published monthly by the American Nature Association
Entered as second-class matter May 31, 1927, at the post office at Washington, D. C. Additional entry at Greenwich, Conn.
Publication and Editorial Offices, 1214 16th Street, N. W., Washington, D. C.
Chicago Advertising Office, 25 North Dearborn St.
Additional Offices of Publication, Greenwich, Conn.
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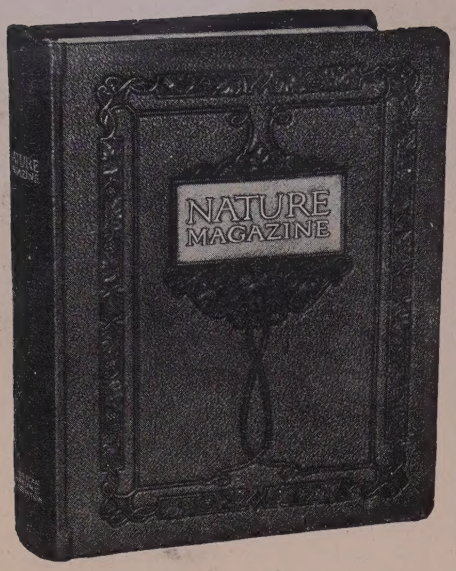

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Gladiolus And Shrubs

Comes to hand together for review two valuable little books for the home-owner and gardener. They are *Shrubs* and *Gladiolus* by F. F. Rockwell, and the first two volumes in what is apparently to be a set of Home Garden Handbooks being brought out by the Macmillan Company. Books on Irises, Dwarf Evergreens, Rock Gardens and Peonies are in the process of preparation. These books are handy in size and mighty handy in contents. They are practically written for the amateur gardener and most assuredly worth a dollar each.

At the same time, in testimony to Mr. Rockwell's prolific writings on gardens, we have for review his *Book of Bulbs,* a larger volume covering the wider range of bulb gardening and culture. This is likewise a practical handbook and is also published by Macmillan, selling for three dollars.

For The Scientist

The Nature of Matter, Gravitation and Light, by Albert P. Mathews, Professor of Biochemistry at the University of Cincinnati, comes to hand from the press of William Wood and Company, 51 Fifth Avenue, New York City. It is, as the title indicates, a purely scientific volume with a highly scientific treatment. The price is $3.50.

As To Fossils

A new leaflet in the fine series of the Field Museum of Natural History in Chicago comes to hand, this one with the title *How Old Are Fossils?* It is written by Sharat K. Roy and is Leaflet 9 in the Geology series. This leaflet should be valuable in connection with any geological study and is written from the popular point of view. It is available for twenty-five cents.

Our Wonderful World

For the title of his Nature text book Emery Lewis Howe has selected *Our Wonderful World,* apparently because his treatment of his material throughout reflects his sincere interest in and marvelling at the fascination of Nature study. The author treats of insects, birds, growing things, mammals and physical phenomena but does not in any sense try to cover but a fraction of each field, drawing lessons from this fraction. The handling is for grade school age and a classroom adaptation has been supplied by Jean Gertrude Hutton. The publishers are The Abingdon Press, 150 Fifth Avenue, New York City, and the price is $1.40 plus postage.

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Articles for Nature Magazine telling of his Labrador experiences will be prepared by Mr. Cleaves and his new lecture *Cruising the Canadian Labrador* will be ready Nov. 1st. Mr. Cleaves offers also *Outdoors in the West, Birds of the Atlantic Coast* and other illustrated lectures on wild life adventure and travel. For terms and information address: *Extension Department,*

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New Mexico Takes Stock

An admirable publication is *Wild Life of New Mexico,* written by J. Stokley Ligon and published by the New Mexico State Game Commission. It is, in effect, an account of stock taken by its author and a plea for the conservation and wise management of the wild life resources of the State. Beginning with a general discussion of conservation, the utilization of land for wild life and the economic value of wild life, the book proceeds to life sketches of the game animals, resident game birds, migratory game birds, fur-bearing animals, fish and fishing waters and game refuges and sanctuaries. It covers within its 212 pages a wide range of subjects and is notable in its completeness. New Mexico is to be congratulated in having brought out such a volume, copies of which are available from the State Game Commission, Santa Fe, New Mexico, for $1.25.

Playing The Trout

He who revels in the sport of trout fishing owes it to himself to read *Ye Gods and Little Fishes* by Eugene E. Slocum. When the streams are frozen and the rod and reel packed away with the box of flies, the fisherman can fish by proxy with this book and an easy chair before the fire. Not that its appeal is limited to the winter months, because it should please the fisherman the year around, but it is a good setting for reading and dreaming. The publishers are Dodd, Mead and Company and the price is $2.50.

About Bad "Bugs"

Readers of Nature Magazine are acquainted with the writing of Dr. Thomas E. Snyder of the U. S. Bureau of Entomology, and will be interested in a new bulletin of his brought out by the Department of Agriculture as Department Bulletin No. 1490. It is a discussion of defects in timber caused by insects and is of interest to the home owner, builder and others with related interest. It can be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., for 15 cents.

For Small Museums

In preparing his volume, *Manual for Small Museums,* Laurence Vail Coleman, secretary of the American Association of Museums, has sought to provide a practical book that will assist those who set about to found museums or to build up small museums now existing. Mr. Coleman has found in his work that the development of museums has in many cases been hindered seriously by lack of information. The author has gathered together data collected here and abroad and incorporated in his volume only such suggestions as have been tried. He attempts no visionary or untried schemes and has kept before himself constantly the viewpoint of the small museum. Mr. Coleman discusses the general purpose of museums and their field, their organization and administration, curatorial work and educational work done by them and details of physical equipment. It is a thorough-going volume, which is brought out by G. P. Putnam's Sons, New York, and sells for $5.

A challenge to dare death!

Of all stories of aviation perhaps the most breath-taking is the feature story in the November AMERICAN BOY. A German Fokker plane swoops from the sky. The pilot, with a mocking grin, drops a paper weighted with a stone. Douglas Renfrew, British flying corps officer, recovers the note. "Come up and fight," it reads, and is signed by the German ace of aces. Renfrew, knowing that death will ride on his wings, roars aloft to meet, in lone combat, the pilot who had slain so many British airmen. "The Man Who Played the Game," *by Laurie Erskine,* is a thriller you won't forget!

Don't miss *Merrill Hamburg's Second Article* in November. It tells how to build an outdoor "pusher" airplane that will circle about for more than a minute. Just like the big passenger-carrying planes! Learn how to get all materials at cost. Also how to join the Airplane Model League of America, and get a membership card and button free.

The Yale and Princeton Quarterbacks Talk It Over—A unique, inside story of brainy, resourceful football! Phil Bunnell, captain and quarter of the 1926 Yale team, and Dan Caulkins, Princeton quarterback, go over their bitterly fought struggle (which Princeton won 10 to 7) play by play.

The Sheriton Wallop brings back Rusty Nayle, Flip Jones and Red Barrett in an exciting football story. A strong Sheriton team faces a crucial battle. What tactics did they use in the "big game"? Also Sol Metzger, former University of Pennsylvania coach, propounds three more questions on gridiron tactics. Ticklish situations which you readers try to get out of. Football brain-teasers!

November, Thanksgiving issue, has a splendid Pilgrim boy cover *by Walter Beach Humphrey.* And "Crusoe Treasure," *by Ellis Parker Butler*—a side-splitting story of Jibby Jones on a breathless treasure hunt. Also new instalments of those gripping serials, "Red Crow's Brother" and "Drumbeaters Island."

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Nature Magazine, past and present, is indexed in the Reader's Guide in your library.

NATURE MAGAZINE is published monthly by the American Nature Association
Entered as second-class matter May 31, 1927, at the post office at Washington, D. C. Additional entry at Greenwich, Conn.

Subscribing Membership Blank will be found in the back pages of the magazine.

Publication and Editorial Office, 1214 16th Street, N. W., Washington, D. C.
Chicago Advertising Office, 25 North Dearborn St.
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Additional Offices of Publication, Greenwich, Conn.
New York Advertising Office, 171 Madison Avenue.
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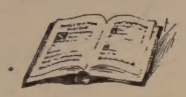
NATURE CALENDAR

NOVEMBER

by E. Laurence Palmer

"It was November. The snow fell with rigorous persistence so that poor people looking up wondered where it all came from. Was it only Pagan Jupiter plucking geese upon Olympus? Or were the holy angels moulting?" So writes Robert Louis Stevenson of the month in which he was born. That it is an apt description of the late part of the month many readers of this page will be able to appreciate. Certainly the weather conditions of November would not fit Stevenson's description of a summer breeze as "a faint wind, more like a moving coolness than a stream of air". The more one reads the truly great writers the more can one appreciate that for the most part they were reasonably accurate observers of Nature. In addition they had the gift of the true teacher and could point out a new idea without making its appreciation obnoxious because of former presentation.



Of course we all think of Stevenson primarily in connection with "Treasure Island" so let us for awhile in November consider ourselves as pirates searching for some of the many treasures that Nature has hidden away for the winter. This may be in the form of a "treasure hunt" or in some equally harmless manner. It has not proven profitable in modern times to be destructive pirates so there will be little blood shed in the treasure hunts I would propose.

Under stones are to be found innumerable treasures such as ants, slugs, pill-bugs, spiders, earthworms, beetles and other creatures. Some of these seek this sanctuary for protection and some go there for food. Some rocks in the field cover a multitude of forms and some cover none. Can you determine any of the reasons for these differences. Two rival "pirates" on a hike

might gather about a stone and after loosening it but before turning it over decide what they think is beneath. The one who guesses correctly of course gets the "treasure" in the form of a credit. As the month of November progresses these creatures that are to be found under stones will become increasingly scarce as they will work their way deeper into the ground.

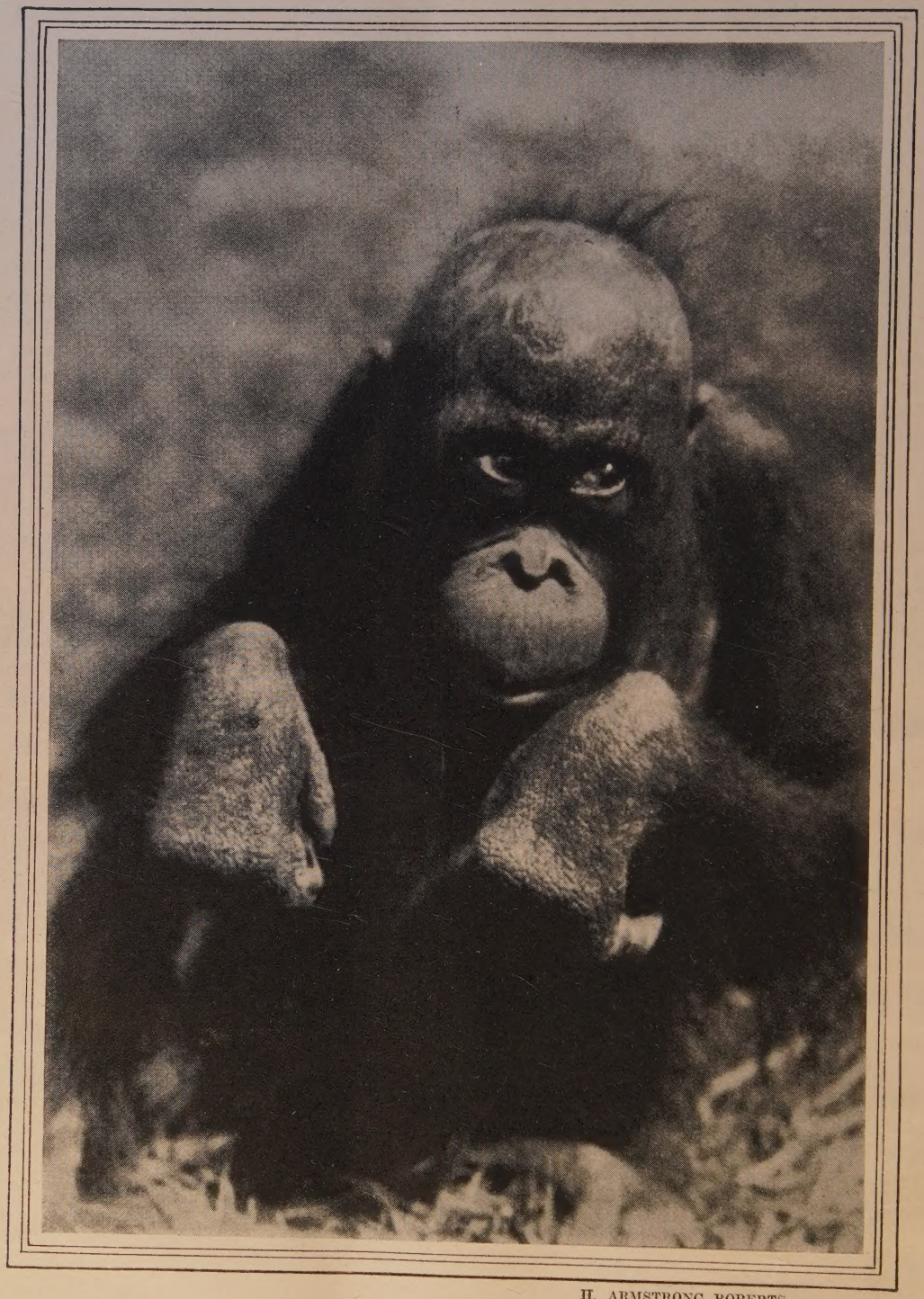
The southern flight of ducks will be well under way in November. With them will be the loons and grebes, these having left the northern United States probably by the end of November. Not infrequently these creatures are picked up away from water. They have the misfortune of being unable to take to flight from land. Instead they must "get under way" by swimming rapidly.

Crickets may still be heard through most of the month. By a somewhat simpler method than that suggested previously in these columns the temperature may be indicated by the frequency of their calls. To do this add 37 to the number of calls given in 15 seconds. This will give the temperature in degrees F.

Many insects and other small forms of animal life will have sought to protect themselves from the winter by means of galls which they formed much earlier in the season. In some of these galls, the creatures will continue some activity throughout the winter while in others they will lie practically dormant. One cannot say truly that all "galls" are divided into three parts but if you will divide any gall about that number of times you will find something that may hold a greater interest for you than did Caesar's account of a three-parted Gaul. Possibly the three parts of the gall to

which I refer might be the protective outer covering designed to keep out water, the inner material designed to provide food and a certain amount of insulation and thirdly the creature that is responsible for the gall.

While the insect-eating birds will to a large extent have gone south by the end of November the insect-eating mammals will for the most part be with us. Some of the species of bats will have gone with the birds but others will have gone into hibernation. Other insect-eating mammals like the shrews will be as active as ever trying to satisfy that appetite which is continually making demands upon their energies. The skunks that filled up on potato beetle larvae earlier in the season may still find not a few insects to satisfy their needs. In November, they will, however, be well supplied with fat to help them over the hard times that are to follow.



H. ARMSTRONG ROBERTS

"THE ZOO OUGHT TO BE RECOGNIZED AS ONE OF THE MOST POWERFUL MEANS AT OUR DISPOSAL TO HELP DAM AND STEM THE TIDE OF CRIME"

NATURE MAGAZINE

Volume Ten
No. Five

November
1927

THE KING OF CATS

The FREEDOM of the ZOO

by Stephen Haweis

TANGANYIKA, formerly German East Africa, was chosen by the Smithsonian-Chrysler Expedition seeking animals for the National Zoo because it is one of the richest game lands left in the world. It is not yet organized for big-game hunting from an armchair. It is less popular and far less visited for any purpose than Kenya, its neighboring colony, where guides, or "white hunters," are easily obtainable and every detail of *safari* is so carefully worked out that the tired business man can be sure of performing doughty deeds in the limited time at his disposal, with the minimum of risk, and return home covered with honorable sunburn, a few skins for his den, a few head-hunters trophies with which to disfigure the hall of his country home. Such is the ambition of some.

There is of course a spice of chance in all big-game hunting. Even against the high-powered modern rifles the savage intelligent elephant and the imbecile but equally ferocious rhinoceros still have a chance,—a very little one, for the "white hunter's" business is to see that his client gets what he came for and if one bullet goes wild, another, and sometimes several others, reach the mark. There is generally more than one gun upon which the safety of the party depends, but that is not emphasized; it is never referred to in the after-dinner story in the best circles. "I raised my gun when the brute was charging straight towards me at the rate of fifteen hundred miles an hour, and when he was within ten feet I pulled the trigger and there, over the fireplace is his head, looking as much like him as a Greek taxidermist who had been brought up with rabbits all his life could make it."

Done in one way big-game shooting requires all the courage and endurance that a strong man can bring to it. In another way it is merely an expensive form of self-deception. There is more than enough of both kinds in Africa; a kind of unpunishable murder which is rapidly becoming fashionable.

Catching animals alive is something else again. I do not wish to confound it with "sport." You do not sneak up upon an unsuspecting animal and then kill, flay and stuff it. Catching it alive and unbroken requires

THIS article is prefatory to a series by Mr. Haweis, a member of the Smithsonian-Chrysler Expedition, which, under Dr. William M. Mann, Director of the National Zoological Park of Washington, D. C., recently went to Africa in quest of new tenants for the zoo. Succeeding stories are full of the adventure of collecting.

IN DEEP BROWN STUDY

Animals live or die in captivity in some sort of ratio to their intelligence

RHINO EXPLORES A BIT

From the business-like big-game hunter he gets small quarter; in the zoo he is safe

INTERNATIONAL

skill, energy, patience and a variety of creditable qualities. And when caught the animal must be stuffed every day. Food must be obtained for it which is very often different from what it is accustomed to eat. Sometimes it will not eat in captivity at all. Sometimes it lives in apparent contentment for twenty years, or it may die without warning, often without ascertainable cause, in twenty days, or twenty minutes. A sudden fright or a sudden draught may kill an apparently hardy antelope very quickly. Legs and horns contrive to get caught in surprising ways, and they break. Many wild animals are afflicted with internal parasites: the change of diet and reduction of exercise may create circumstances that are favorable to the parasite and unfavorable to the host. That is one explanation, and there are dozens of others, equally good. Anything may die without warning but, on the other hand, species which seldom live long in captivity will sometimes provide an individual which lives for years to delight thousands of people who could never possibly see it except in a zoological collection. Those which die are the soldiers who die so that love and understanding of their kind may be born; for every one which lives to become a pet wins friends for the cause of kindness to, and sympathy with, animals. That is what a zoo is for, but it is not the whole reason for its existence. Zoos do not show wild animals only for the amusement of the crowd and diversion of children. By keeping animals alive we discover what animals can be kept and how.

They demonstrate the science of pet-keeping and pet-culture at its best and everybody can obtain from any zoo director advice and assistance on any matter connected with either subject. Is that why zoological collections are considered educational? Yes, but there are other and better reasons also. Pet-keeping and consequent knowledge of animals betokens a highly-civilized mind and of this phase of human activity zoos are the natural head. The savage seldom keeps animal pets for his pleasure. To him animal and meat are generally synonymous and nothing more. The zoos have potentialities of being of the greatest assistance in the development of character and desirable characteristics in the race. They teach us how to keep our pets properly, and if there be any pursuit which cultivates cleanliness, responsibility, kindness, restraint of temper and all the home-building virtues, it is home-making for some little brother in fur or feather. Pet-keeping teaches a child to form habits of amusing itself which endure all through life. Children brought up with pets do not grow up into criminals. The zoo ought to be recognized as one of the most powerful means at our disposal to help dam and stem the tide of crime.

But there are of course people who strongly disapprove of pet-keeping under any circumstances; they cannot bear to hear of anything being killed, caged and imprisoned,—except man. The dear little animal should have its happy life, the bird in the sky, the rabbit in the field, the fish in the stream. It never occurs to them that the lives of animals are far more precarious under Nature's care than they are in that of a properly trained keeper,—which any child can become. The dear little bird is not safe even in the sky. The gun and the hawk may get him by day, or the owl by night. The small animal's terror when it is caught is the culmination of the continual fear in which it lives. Even the fish has more to do than lie in the stream and wag its tail. Animals persist

through continual watchfulness, continual ingenuity, continual courage. There is no such thing as a "happy life" but only moments of happiness during periods of temporary health and security. Their lives are not so very different in this respect from our own.

Freedom itself is a delight, up to a point, but it is not everything. It may mean only the free right to starve which drives us all to try to exchange a little of our liberty for lodging and groceries. The animal does not prefer cage life at first and perhaps its instinct would generally incite it to try the forest again after years of captivity. But animals very soon come to regard a cage as home and their own. When let out they learn to run back to it for safety and they are not often a success in the wild state after a period of luxury and personal attention under artificial circumstances. The pleasures of freedom are in close alloy with terror and death. Only a few animals, mostly the largest and strongest, seem to be without fear and without dangerous enemies. The great majority of animals are liable to be caught, slowly pulled to pieces and eaten alive or only half dead at any moment, and it is this fate which the newly-captured animal expects until continual kindness makes it forget the usual lot of its kind.

The easy inexpensive virtue of sympathy is of all merits found oftenest in the wrong place. The well-merited slap to an incorrigible child elicits it from the sentimental bystander, the cat which has been out in the rain, the caged canary, or indeed anything in a cage. But those who sigh over the misfortunes of others often prefer to stop at that. The comfort of having demonstrated the possession of a tender heart is enough to satisfy them, the remedy always lies with the other fellow. If he is generally deaf to sentimental entreaty and the cry of shame, sometimes he is right. The canary, for example, is an artificial bird; it would be killed by the rough-neck sparrows before it could begin to learn the delights of the simple life and long before it thought of learning how and when to protect itself. It is not kind to release it.

Caged animals have probably very short memories. They soon forget the struggle for existence if they ever knew it. Those who have become accustomed to having everything done for them not only learn to like it but take very kindly to it indeed. They lose the instinct for work as do human beings who have much wealth and little mentality. Animals are not so very different.

Miracles of foolishness can be wrought by putting oneself in the animal's place and by imagining ourselves under the conditions of cage life without abandoning the completer reason, memory and knowledge of our wider existence, but it is nevertheless the only way in which we can begin to understand animal psychology at all. But we ought always to make great allowances for these things and while it is foolish to deny that animals have any power of reason and communication with one another it is still more foolish to endow them with all these faculties in a more highly developed degree than we know they possess, by demonstrable experiment. Perhaps the broad, general principle may be stated by saying that the average intelligent animal which is "almost human" ought to be compared with the average ordinary man whose lack of power for abstract thought and study makes him almost purely animal,—

INTERNATIONAL

A STUDY IN SPOTS

The author tells of being the first white man to be seen by a freshly-caught leopard

GREAT GRAY KANGAROO

One of the most interesting animals that one sees in a zoo

J. A. D. PHILLIPS

if not vegetable. The animal lives in the moment, it has few preoccupations and few thoughts unconnected with its immediate needs. Sudden scent, sight or sound may recall pleasure or hatred of an individual to a creature's mind but it does not think and brood about circumstances long past and probably never thinks of them at all unless something awakens the memory of them.

I had exceptional opportunity with the Smithsonian-Chrysler Expedition for studying the reaction of freshly-caught animals to cage life. A great variety of animals came in every day, large and small, fur and feather. On one occasion I was the first white man to be seen by a trapped leopard. It was a sight never to be forgotten. The rage of the creature was beautiful as it flew at the bars and crushed to splinters the wooden treadle that released the catch which had been its undoing. Like the kitten playing on the hearth he rolled over on his back and kicked with his hind legs, so amusing in the kitten, but less amusing when one remembers that one kick from a leopard would completely disembowel an animal no larger than a man. But this rage was not fear. Even rage is not the first emotion. The very first is shame. Shame at having been outwitted, shame at being in the power of another, shame at having been so foolish as to be caught. Second thoughts coming too late, tell him that he should have known that goats are not usually tied up within a thorn protected hedge in the heart of the forest, and having free access only through an obviously man-made house,—reeking with the scent of him also.

INTERNATIONAL

WADDY HAS A MANICURE

In the zoo the animals enjoy a care and freedom from worry that freedom itself denies them

Shame comes first, and the rage and the desire to fight his captor for his liberty come afterwards. Fear comes later; not the fear of man but fear because he cannot get out and thinks in consequence that no food can possibly get in. The first few hours must be terrible, since to a caged beast they must seem to mean slow starvation. Then the miracle happens. Just enough good meat appears and a tin pond of water, just enough for once, but who knows where the next meal will come from? It takes time for an animal to realize that meat can be obtained without the preliminary of stalking the living prey and killing it. But it comes regularly day after day. New bedding is provided and the rigid cleanliness of a model dwelling for the poor is maintained. Men with their mates and young wander along outside the bars, but they have no guns; instead, they have peanuts! Food and protection from enemies are free. When they are sick the utmost care is bestowed upon them . . . . it is not the best of lives, but it is not the worst either. Indolence and food are the human ideal of many who are credited with being far higher in the scale of life. The caged animal is not badly off and the most intelligent individuals know it.

It is my personal belief that animals live or die in captivity in some sort of ratio to their intelligence. The wise man learns by experience: it is not the most intelligent animal which day after day beats itself against the bars it knows it cannot break. The man who can control his fear and face whatever eventuality may offer is the useful and intelligent man. The intelligent animal becomes tame to the man who treats it well. It is often obliged to learn to eat food to which it is not accustomed and may never have seen before; the clever venturesome ones are willing to try anything once, and again if it does not kill them. The foolish animal probably doesn't recognize what it does not like as food at all. Or it is somebody else's food. They starve beside it as ignorant men starve their intelligence with the yellow press when there is wholesome literature on a plate in every corner of their lives. That is perhaps a fair parallel. Compromises have to be made on both sides. I knew a golden eagle once which had been caught when it was a nestling by some Breton peasants. They did not know what eagles ate so they fed it bread and milk. As it grew up it learned to walk about in the yard with the chickens but it could not fly because its wings had been broken in its fall from the nest. It shared the life of the chickens and ate pig wash and table scraps. It had never eaten raw meat in its life and ran away apprehensively from a live mouse. It had learned to adapt itself to circumstances and live where many another would have died.

Keepers at the zoo find that it is a most dangerous moment when animals, which have lived satisfactorily within doors, are turned out into their summer quarters. Some will make a mad rush into the fence and break their necks at once; the wiser ones look before they leap but the loss in money value is the same however they elect to kill themselves. The hyaena which has lived for seven years at the National Zoological Park has never been seen out of his indoor cage though the door stands open all through the summer months. All the neighboring animals enjoy lying in the sun out doors and the hyaena can see them from the door of his cage, but he never comes out.

It is probable that little animals hardly realise they

are confined at all when the cage is large and little visited. Prairie dog villages in which a small community of these animals is kept under natural conditions seem to satisfy the creatures perfectly for in the wild state these animals seldom travel far from home. A garden tortoise would certainly never know there was a wall beyond which it could not go. The larger the cage, the harder it is to tame the occupant. It has greater fear in proportion to the amount of liberty accorded to it. Freedom to go means freedom for enemies to come also, but a small cage, if it is large enough for a reasonable amount of exercise, concentrates the attention of the animal upon his only friends, those who bring the dinner, master or servant, whichever you please.

Slowly we are outgrowing the notion that all animals were created especially to be of some particular service to the children of Adam, the first pet-keeper. It was a form of vanity which we might well despise in a barn-door rooster and it is the more astonishing as there are so many animals which are obviously of no use to man whatever. An elderly lion might be pardoned for thinking that man was provided by the good God as provender for those aged cats which can no longer get decent food, being too slow to catch antelope or pig. He would have a shadow of logical reason for the supposition. There is little reason to doubt that, outside of the mystery of our intelligence, animals despise us heartily. If they knew us better they might despise us more. It is likely that we are protected also by a disagreeable odor which fills animals with a natural horror. No animal seeks man for food when other food is obtainable. Proud as we are, leaders in Science, Art and Religion, to the animals man is probably no more than an occasional disaster or, to the hungry opinion of the animal, a poor food substitute!

UNSTARTING the REDSTART

by P. B. Peabody

A FAIRLY lone elm on a steep wooded slope. A black and yellow male redstart, mercurial dandy with twitching tail and a brilliant "T'se-hee-vra-hee-vra-hee." It was his singing-tree.

Next week, a dead, leaf-like down-fluttering from the elm's lowest limb, and a scuffling among the dead leaves beyond the boll. It was the redstart's brown mate. On top of that lower limb a neatly-felted nest; four white, brown-speckled eggs.

Later, four fuzzy, squirmy baby redstarts, finger-tip size. From a perch, six feet away, I watched the frantic mother come and go, then settle, at last, upon her nest. She had banished fear.

Down to the hill bottom leisurely she went, working her way back among the dead leaves. Always, just when she had reached a certain place along the slope, every big little mouth in the nest would fly open. So did I learn just how far a two-day-old redstart could hear! An interesting discovery it was, indeed.

Weary of my perching, as the sun went low, I ventured the thought: "Can I crawl past the redstart, and down, without startling her?"

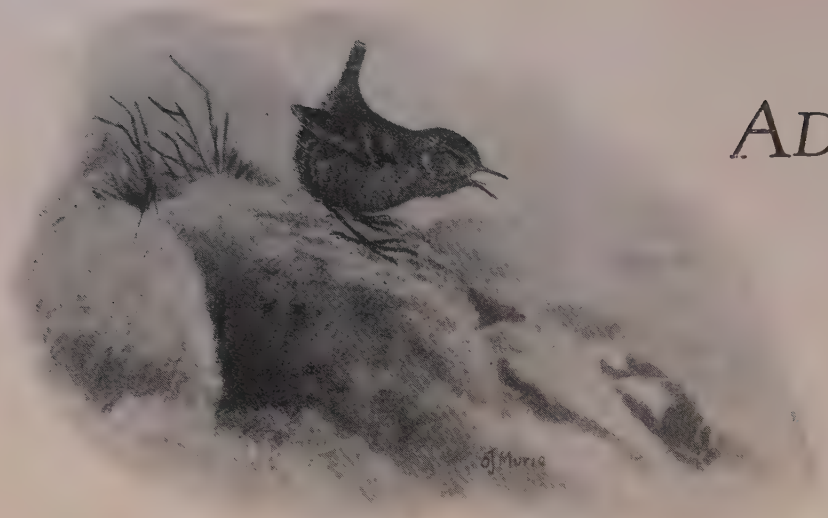
P. B. PEABODY

THE REDSTART DID NOT START

Trustfully she watched the man close to her nest and stayed

Slowly, and yet more slowly until I reached the boll of the elm. I had passed her at a couple of feet, while she steadily watched me go. To brace myself, then, I crashed my left-foot spur into the trunk. The tree trembled, but the redstart did not stir. Cautiously I began leaning toward the nest with infinite slowness. But the redstart just kept watching me, intent but unafraid. The brim of my straw hat was resting, at last, upon the limb, at the very base of the nest. The little mother still stayed on.

Carefully I spiked my way down, the twelve feet, to the ground, and left my redstart sitting there. It had been a real triumph for the man. A triumph, also, for the trustful bird.



"HE WILL SCOLD YOU AND TEASE YOU, BUT SHOWS HIS GOOD WILL WITH A CHEERY SONG"

ADVENTURING with the ALASKA WREN

by Olaus J. Murie

Illustrations by the Author

JUST NORTH of western Alaska Peninsula, hidden away in the fog of Bering Sea, lies a little island some fourteen miles out from the coast and not more than two miles square: a dome of lava rock rising one thousand six hundred feet above the sea. Snapper Island, fishermen call it, but it is Amak Island on the chart.

I saw it first while coasting along the Peninsula in a dory with a fisherman, who told me that little was known of this island and that few had ever landed there; but there had been rumors of sea otters and he had heard that one could land on the south side where a long reef was partial protection from the ocean swell. What could one find on such a rock pile? Probably not much, but it became an intriguing mystery and I vowed to go there at the first opportunity.

In July, Don and I came along in our little gas-boat, determined to visit Amak. We had to pick a favorable day, for ours was a frail craft and, landlubbers that we were, we had great respect for the ocean. But there came a day when fog hung low, blotting out all but the base of the island. And the sea slumbered, as if caught unawares for once. Now was our chance! With two small casks of fresh water and a supply of food stowed away, athrill with excitement, we set out on our voyage of exploration.

We were back in boyhood, young explorers seeking adventure, for it took little imagination to transform yonder island in the mist into a veritable terra incognita. But this was no toy ship on a mill pond. The Bering Sea lay before us and stern reality lurked around the corner; another of our boyhood dreams come true.

It took our little boat several hours to make the run, but eventually the island grew before us, green at the base, the middle rocky heights losing themselves in the fog above. We began to see puffins flying by on twinkling wings, each one bent on urgent business; and cormorants, long necks and slender bills pointing the way to their destination. Suddenly we realized that we had arrived and drew into the shelter of the reef, where, down through the green water, we saw great boulders and long streamers of kelp. The shore was a boulder beach. Would it be too rough for our boat? Don insisted that unless we found a strip of sand on which to beach our boat we would have to go back to the mainland while this weather held. Already the incoming tide was breaking over the reef and miniature breakers were lapping on the rocky shore; the shallow water bristled with glistening rocks and a breeze seemed to

"TO STAND FOR A MOMENT IN CLOWNISH DIGNITY"

be picking up. The whole outlook was forbidding.

"Well, let's have a look, Don."

We anchored the gas-boat at a safe distance and started for the shore in our little dory, which we had been towing as a tender.

What was that? Above the sound of distant droning surf and the swish of the tide on the rocks about us, came a trilling, bubbling song. Surely some little bird on the beach. Yes, there on a limb-tip of a scraggly piece of driftwood was the tiny songster, a winter wren! As he sang and bowed and bobbed on his perch, a feathered acrobat with a happy soul, an exotic bit of life in this place of threatening storm and menacing rocks, new courage came to us. The green slope before us, the beach, distant cliffs with promise of nesting sea birds, the driftwood, high and dry, with its assurance of fire and warmth, all were friendly and inviting. A cheery welcome this, on a strange shore.

"A FEATHERED ACROBAT WITH A HAPPY SOUL"

We hurried to the land and scrambled over the boulders looking for a safe berth for our boat. Luck was with us, for a narrow strip of sand, the only spot available, answered our need. That night when high tide had pushed our boat, in which we camped, up the little sandy stretch and left us high and dry, and we heard the breakers once more pounding with accustomed fury, we knew the die was cast. Here we would stay, be it a day or a month, until another calm day would permit us once more to venture forth on the deep and return to mainland. I thought of the little wren, somewhere out there on the beach, a friend in exile.

The following days were busy ones. At every turn we found new birds. Gulls were nesting above high-water mark and we found a big colony on a high grassy slope; bright-eyed speckled young ones hiding in the grass. As we explored the cliffs, innumerable sea birds came to light: funny little puffins emerging from crevices in the rocks or from burrows in the earth, to stand for a moment in clownish dignity before launching out on a fishing foray; all over the face of one high cliff thousands of somber cormorants, with long snaky necks and sea-green eyes; noisy bowing murres, standing in rows and huddled groups on every available rocky ledge, each one on guard over a single egg, warding off the approach of the egg-hunting gull. A motley population, going and coming, squabbling, hissing, protesting at the marauding gulls, all busy in the vital task of hatching eggs.

Below these busy cliff dwellers the restless tide roared and pounded against the base of the island. Just beyond the tossing foam a flock of harlequin ducks defied the turbulent water, bouncing lightly on the heaving swells. A bewhiskered seal came up for air, bobbing in the waves. A duck hawk dashed by, swift and deadly. High overhead a pair of bald eagles soared serenely, round and round, far above the turmoil. Such is the life of the cliffs and the sea.

Back from the sea, the beach and cliff face were hidden from view, the surf and babble of birds became a distant droning undertone. Here, on rugged lava slopes softened by heavy moss, we found slender ferns in sheltered nooks. Here was quiet and peace. Wisps of fog drifted by us, moist and refreshing, leaving tiny jewels on the moss. The stillness was suddenly sweetly broken by a strain of irrepressible, bubbling music, our winter wren once more! There he was on a boulder, tail-tilting little sprite. Next moment he was gone under the rocks, but reappeared with a scolding "check!" in a crevice near by, in a game of hide-and-seek. Another one chattered at us, still another farther on. In fact there was a crowd of them trooping along in our direction, a family of them coming up to peek at us around the edges of rocks, to scold and tease us; a saucy troop of youngsters. There must have been five or six of them, but they disappeared and reappeared so mysteriously that there was no telling the exact number.

When they came near we could see that the parents were faded and worn in plumage, for it was July and long since they donned their fresh wedding coats. But when the male let go his feelings in a trilling ecstasy of song, it was plain that he was not worn in spirit. His offspring were enthusiastic midgets in the first bloom of youth, with their soft dark-brown plumage.

Having peeked at us from every angle and satisfied their curiosity, off they went tracking across the rocky slope, the song of the male growing fainter in the fog.

Who is this hardy northerner? Ornithologists call him *Nannus alascensis*, the Alaska wren, and we learn that he is found on some of the Pribilofs, eastern Aleutians, western Alaska Peninsula and the adjacent islands. Near relatives are found in suitable localities along the southern Alaska coast, and our wren of Amak Island is cousin to the western winter wren of the Pacific

coast, who lives all the way from Prince William Sound to California, always the same chipper little bird.

An adventurous little sprite, this bird of Bering Sea, to seek this lonely island in the edge of the Arctic and call it home! For he does not migrate. When the hordes of nesting sea birds have scattered and other birds desert this island home; when the gales of Winter, ice and snow, and wintry rain sweep down upon this region, the winter wren is there to brave it out among the labyrinths of the tumbled rocks and the driftwood on the beach. In that bleak and dreary season, when grinding ice floes form and sea birds seek the open water to the south and land birds revel in southern winter homes, the Alaska wren is almost sole possessor of his island, a tiny monarch of his barren dome of rock. Then when another season swings around and spring birds come flocking back, he builds a snug nest in a rocky crevice and rears his baby birds to be happy philosophers like himself.

As the days went by and Don and I explored the island, noting the bird life, scrambling over kelp-covered rocks, making the most of our little adventure, we often met the winter wrens. They seemed to be everywhere and always busy and full of song. One day we went around the island in a final survey to learn just how many cliffs there were and what birds were nesting there. We came to a rugged line of bluffs, where a lofty bench of the island broke off abruptly to the sea. On a rocky shelf, far below, just above the surf, lay a herd of sea lions; a pebbly beach a little to one side of them. We made for the beach, scrambling down a steep draw with crumbling rock and gravel. From a point of vantage we watched the sea lions, yellow battle-scarred old bulls with enormous bulk and blunt heads, sleek and trim dark-brown cows and younger bulls, with here and there a pup. Now and then an old patriarch would raise his head and roar defiance at the pounding surf, and once the old lord of all the herd humped along in a lumbering attack on another bull, himself a giant, and drove him into the sea.

As we stood there, somewhat awed in the near presence of the sea, the towering bluffs, and that roaring mass of amphibious life on the rock, silvery, rippling notes came from the cliff above us, barely audible; and again, on the face of the cliff, we spied an Alaska wren! Even here, almost within the spray of the dashing surf, in the din of the breakers and raucous bellowing of sea lions, this hardy songster was at home, his song a silver tinkle in the uproar. As we climbed out of the sea lions' retreat to continue our journey the little fellow led the way, but left us on the mossy slope above.

Calm days are rare, so when we awoke one morning and found the sea smooth, we lost no time in launching our boat and speeding for the mainland. With some regret we watched our island sinking in the distance. A cap of fog hung over the top and we saw the green herbage around its base pale and fade to gray. Many birds we had seen, a fascinating visit. A multitude of sea birds, eagles, hawks, sea gulls everywhere. On the beaches we had found the Aleutian song sparrow, on the rocks the rosy finch, interesting personages, but the one who lingered in our thoughts was the Alaska wren, who first bade us welcome, and cheered us on our departing way.

SNOW FLOWERS *of the* SIERRAS

by Frank C. Greissinger

ONE of the most spectacular sights for the flower lover is his first discovery of the *Sarcodes sanguinea,* of the Indian-pipe family. A partiality for the high altitudes is a characteristic of the plant so that one must be in the mountains by May unless he would climb to the snow-line later.

One day while walking through some open woods, I saw a bright splash of scarlet under a pine tree, like a gay Christmas tree ornament fallen from its branch above. It proved to be a lovely snow flower, and later I found nineteen in one patch. The mature flowers were about twelve inches high, cone shaped at the base, which was three inches in diameter. The stalks were fleshy, semitranslucent in the sunlight, with a frosty bloom on the entire plant. The bracts, flowers and stems were all of the same brilliant color. In some of the individuals I found unripe seeds of the same lovely red color.

THE SNOW FLOWER
It is a brilliant and fascinating wild denizen of the higher altitudes

It is one of the prettiest sights imaginable to see the brilliant scarlet flowers against snow and brown pine needles as I did this year. Fortunately, they are now protected by law, thus preventing their extermination because they are eagerly hunted by tourists and campers who do not stop to think.

COURTESY KING CONSTRUCTION CO

WHERE ONE CAN OUTWIT THE WEATHER

There is much enjoyment in gardening under glass and having many growing things out of season

GARDENS UNDER GLASS

by Estelle H. Ries

THOSE who love plants and flowers about them do not have to confine their joy in these beauties of Nature to seasons when they will grow out of doors. It is entirely possible to provide suitable places for the growing of these things indoors so they may be enjoyed throughout the year. A location convenient and accessible, set aside for this purpose, adds to the charm of home both by its own merits and in its far-reaching results.

A logical place for a window garden is afforded by a bay-window, or by a balcony or porch that may be glass-enclosed in winter. A porch with pillars may be readily converted into a plant room for winter use simply by having sash or window frames made to fit between the pillars. These may be easily taken down in summer to restore the porch character, and the sash stored in a convenient place until again wanted. Such an arrangement not only affords a good conservatory but at the same time helps to keep the adjacent rooms warm during the winter. A small oil stove may be used to supply heat, but better, a suitable supply may be run from the main heating plant. Windows or any ventilating sash should be readily accessible and easily worked, and the plants so arranged as not to obstruct access thereto.

In devising a plant room of any consequence there must be ample provision for sunlight, and facilities for watering, heating and temperature control. This includes protection from cold drafts in winter and excessive heat in summer. Easy access to the out of doors is desirable so that the plants may be handled without disturbing the rest of the house, and the room completely shut off when necessary for purposes of fumigation.

Whatever the size and shape of the structure, attach it to the south, or if necessary, the west or east of the house, and let it project so as to have three sides exposed to the light and air. Light should also be admitted from the

THIS is another article in the series designed to be of practical assistance to the lover of flowers and gardens. Another next month.

roof as far as possible. If the whole roof cannot be of glass, even a third of the ceiling area in glass greatly increases its efficiency as a conservatory. If glass can be used only in the sides of the room, it should be carried as high as possible to admit light from overhead.

Ventilation from out of doors can be secured from transoms above. These are best hinged in the center so that when open, the lower part of the window is outside and the upper is inside. By this arrangement, cold air rushing in is deflected upward by the inclined surface of the window and is slowly diffused through the room and warmed before it reaches the plants below. Storm windows are important. They make an absolutely frostproof double wall of glass with consequent saving in fuel. The plants may grow close up to the glass, even touching it without becoming chilled, and the glass is always clear, not being covered with frost in even the coldest weather.

COURTESY KING CONSTRUCTION CO.

GREENHOUSE FOR THE SMALL HOME

Here the garden lover can enjoy himself or herself when winter is at hand

The matter of heating the plant room properly is one of the most difficult and important problems to be solved. The best way is to extend the main cellar under it, thus furnishing a permanent foundation, warmth under the floor, and facilitating the introduction of pipes for heating, draining and watering. A coil of ordinary heating pipes carried around the three sides of the room and kept close to the walls is much to be preferred to any system of radiators, either steam or hot water. The pipes take less room, distribute the heat more uniformly, and can be readily divided into pairs for the purpose of regulation. The valves may be arranged so that one-third, two-thirds or the total radiation may be used at will. The air should be cooler at night than in daylight, for any growth that is stimulated by heat without a corresponding amount of sun is weak and undesirable.

A floor of concrete or tile, sloping toward a drain, preferably in the center, proves most serviceable.

A half-span or lean-to is an elaboration of the bay window conservatory and is built against an existing structure thus saving the construction of one wall, and combining with it in such a way as to take far less space than a free-standing structure would require. For most purposes it should be located with the sloping roof facing south. A popular plan is to attach it to a garage where there is one. The heating system in one structure can then furnish the heat for both. It is always economical to place a small greenhouse so that heating pipes can be carried from nearby buildings, thus eliminating the otherwise necessary workroom for housing the boiler. While a workroom is not indispensable for small houses, it is however a decided convenience, though potting and other work can of course always be done on one of the benches.

If the garage is large enough so that part of it may be used as a separate workroom for the greenhouse, so much the better,

MATTIE EDWARDS HEWITT

THE TROPICS WITHIN; WINTER WITHOUT

The sun-room can be made to do duty as a greenhouse in winter

but there should be no inside entrance between it and the garage, as the fumes of gasoline and burnt oil are destructive to the plants. It is also advisable to have the boiler cellar completely cut off from the garage thus eliminating the dangers of fire from escaping gasoline. The workroom is the business end of the larger greenhouse. It is here that the bins of soil are kept for repotting of plants. It affords a convenient place for the potting bench and for packing flowers to be sent away, for seed and tool closets, and for gardening accessories in general. It houses in its cellar, coal and boiler. In some of the less simple workrooms a second story furnishes living quarters for the gardener or his helpers, and on the lower floor an office for the gardener is included, together with a refrigerator for cut flowers and other up-to-date features.

MATTIE EDWARDS HEWITT

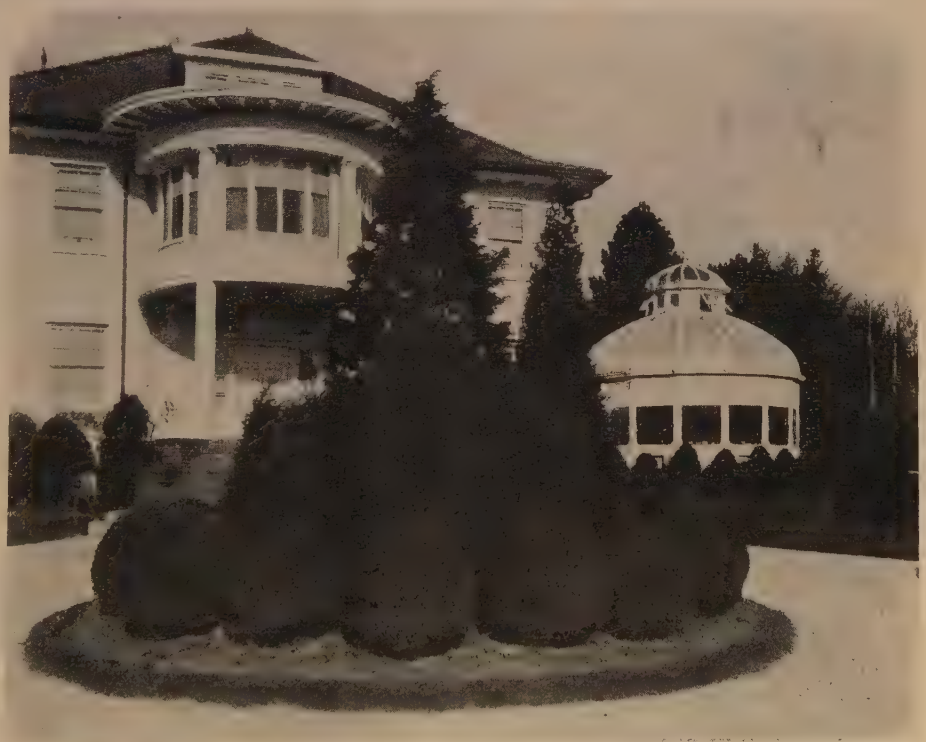
THE PORCH TRANSFORMED

The enclosed porch will give you roses in December if you wish

The pleasures of a real greenhouse are rare indeed, for here one may have a regular indoor garden in full bloom no matter what the season. They used to be called "hot-houses" and as far as being muggy and damp could make them live up to that name, they did so. Improved methods of heating and ventilating have, however, changed this, and the modern greenhouse is no longer stuffy and misty, but a glorious glass-enclosed garden plot. Whatever the calendar, heat or snow, wet or dry, the greenhouse creates its conditions independent of weather and climate, and by a system of perfect regulation of temperature and moisture, provides the ideal needs of your plants and flowers and maintains it uniform. This means goodbye to juiceless grapes, unripe tomatoes, indifferent melons and all the other second-rate fruits and vegetables you have put up with in the past, for in the entirely controllable conditions of the greenhouse you can grow things better than you could ever buy, and can have them absolutely fresh and ripe. In addition to what such an indoor garden actually produces for you, there is the pleasant excitement of outwitting the weather, of having roses not only in June but all year, and all your favorite exotic fruits and flowers at unusual times and in unusual combinations. Those who have thrilled to the experiments of Burbank may in a smaller measure follow in his footsteps with little experiments of their own. In a greenhouse of sufficient size, it is possible to provide a seat or two for owner or guest, and perhaps a small decorative drinking fountain or other similar charming accessory.

In small grounds, it seems preferable to paint the greenhouse green, so that it is not conspicuous. There is no particular beauty about it as a structure, and it is seldom possible except in some small detail, to make it conform to the architecture of the house. Its whole interest lies in the interior.

The foundation and flooring are usually of concrete,



COURTESY KING CONSTRUCTION CO.

ONE TYPE OF GREENHOUSE

Frequently the greenhouse can be made to harmonize with the architecture of the home

COURTESY KING CONSTRUCTION CO.

THE WORKSHED IS IMPORTANT

It is a vital part of any greenhouse and in this one is given special attention

a material also found serviceable for beds or benches. The unit type of concrete bench is particularly convenient. The width of the greenhouse is largely dictated by the benches. It has been found that certain widths for the side and center benches on which the plants are placed, are most convenient for tending them. Thus in order to get the maximum of bench space at a minimum of cost, the sizes of greenhouses are standardized and may be bought in units and extended as need requires.

In greenhouse construction, the wood frame has become a thing of the past, for the cost of its upkeep outbalances its initial cheapness. The iron frame is being generally substituted and is much more practical, with the added advantage of greater light inside with greater flexibility, making it possible for the modern greenhouse to assume more varied and interesting shape than its less amenable wooden predecessor. The greenhouse should be low, for the nearer things grow to the roof, the better they do. That is why tall-growing plants or trees, like palms, have a central room for themselves, leaving lower ones for the smaller plants and flowers. The several divisions of a large greenhouse permit different temperatures in each, thus greatly adding to the growing possibilities of various species.

The most economical and efficient way to have a greenhouse is to order one from the makers of greenhouses who specialize in all the peculiar details of floriculture that a regular builder cannot possibly know. This is one case where guess work is especially speculative and doubtful, and since the expenditure in any case is considerable, it is only good sense to go to sources that are absolutely reliable and experienced. They furnish just the right thing complete, with all the heating, ventilating and other details properly cared for with reference to the special conditions you may impose. The purpose of this article therefore is not to discuss all the technicalities, but to show the possibilities for pleasure and profit to be enjoyed in gardening under glass.

HENRY MILLER

THE START OF A POLITICAL QUARREL

The White House collie, Rob Roy, suspects the feline member of the Presidential family of Democratic tendencies

The Wild Life Sanctuary

by Dallas Lore Sharp

Photographs by
W. L. Finley & H. T. Bohlman

IT MAY BE A MOCKER SINGING
He has found home and sanctuary and sings in his happiness

THE TIME has come to talk of a new thing with the town planning board. In addition to a public park, a public garden, a public play-ground and other benefits public, our town planners must provide a public wild life sanctuary. Long used to the park idea, we practical (unimaginative) people have at last been won over to the play-ground idea. We have accepted the doctrine of the natural history museum, the botanical garden, and even the zoological garden. The wild life sanctuary is a different thing, and meets a different need. Dwelling in the midst of so much wildness hitherto, we have not noticed how this spirit has left our landscape and furtively crept away.

On the part played by the open square and breathing park in city life we are unanimous. As an escape from impending walls, from the confusion of crowds, and from the horror of the thrust of things, the park, the square, and the boulevard must be had no matter what the cost,—and there are few other human institutions so costly. At what enormous expense Chicago is taking from the lake a selvage for the terrible garment of congestion that she wears! New York City at even greater price is about to buy the same thing from the sea. Climb with the motor train out of San Francisco to the Twin Peaks above the city and see how she has laid hold of space from the sky.

The city park by the nature of its position and function is condemned to a certain formal treatment. Its walks are "laid out," composed like the limbs of dead people. Its flowers are in balanced beds. You walk on gravel, raked and swept and trimmed with a tool, unless you walk on concrete. The lawns are mowed and as sleek as a wet seal's flanks; and they snap at you "Keep Off!" The whole place is so neat that it has to be quite nasty. However if The Federation of American Undertakers, say, is in convention in the town, a flower bed appears overnight within the park with—

WELCOME TO THE UNDERTAKERS

done in potted plants upon a pillow of posies—the function of the city park. "Saying it with flowers" is the proper thing for undertakers, too.

That is not the function of the wild life sanctuary, except when the red-shouldered blackbirds are in noisy convention in April, or the migrating swallows in the Fall. The sanctuary is not a show place. It is a hiding place; a place of quiet and escape. Like the park it must be posted against harm, and I had almost said, against alarm—against dogs, guns, traps, cats, nets, fires, and, alas! even against fish-poles. It must be protected against pickers of wild flowers, and all manner of vandals who, in innocence or ignorance, or wantonness seem bent by nature to destroy. But you may walk on the grass, though you will try not to tread on the dandelions. You will climb the trees to look into the crows' nest—to *look,* I say, not to touch the eggs. The wild life sanctuary is yours in all of its wildness to free and express you in all of your wildness, but in none of your cruel savagery.

We have been slow to realize the need of protecting our vanishing wild life, and slower still to realize the need of protecting our vanishing wildness. These two are not identical. You can have wild birds and wild

SCAUP DUCKS IN SANCTUARY
They have no fear of the gun or the blind, learning to rely on protection

SNOWBIRDS COME IN WINTERTIME

Or a pair of wild ducks may be spied bringing off a small brood

flowers without having wildness. You must have a scene and a situation for wildness, in which all wild things, birds, flowers, trees, beasts, waters, clouds and skies are the furniture of wildness, as you require four walls and a fireplace for the furniture of a homelike room, to help express your idea of hominess.

The idea of wild life protection is as old as the Ark. Noah was very modern in his attitude toward wild life. His Ark was the earliest known sanctuary. But both the idea and the language of our present protection come to us out of the more recent custom of less ancient times, of fleeing, when pursued, into the sanctuary and there seizing the horns of the sacred altar for the protection of the gods. So came our present use of the term sanctuary. The wild life refuge or sanctuary as a place harks back to the "city of refuge" of Old Testament times, to that city set apart as a place of escape for the accused from the legal right of vengeance. Such a city is our wild life sanctuary. It is truly a city of refuge, set apart for every pursued wild thing that can escape into its protection, and especially for wildness itself, the hardest pursued of all wild things.

We have only recently thought of protecting wildness. Bird clubs and bird laws, garden clubs and flower laws, sportsmen's clubs and game laws, cover the land with constantly increasing care and protection. But sanctuary clubs and landscape laws, in order to save wild places, and the spirit of wildness, have hardly occurred to us yet outside of our vast scenic parks and forest reserves in the West. That every state, and every city and town, should have its own wild life sanctuary in order to save from extinction its own native and local wildness, is a very new turn to be taken by conservation.

Yet if I understand my own moods and the mood of those who seek the fields and woods it is for wildness that we seek more than for birds and flowers and any wild thing. I have just come in from a Winter walk. I took no field glasses with me, no pencil or note book. I did not go out to study or discover. The wind is high; the January woods are suddenly quite free from snow; I was tired of books and the air of my study; and I have been out among the sounding trees, seeing nothing, but hearing a thousand wild wood notes, and feeling the strength of the hills and the wild winds coursing through my blood and brain and soul. Yet I did see something among the swaying trees, or else it was on the wings of the Winter wind, or else it was from the crest of the leafless ridge away off on the Winter hills. It was bigger than any bird, wilder than any beast, more beautiful than any flower, taller than any tree; for it was all of these and more. I saw it. I heard it. I touched it. And it took hold of me, whipped me over the empty tree tops like a dead leaf from a white oak; blew through me as though an organ with a thousand stops; and chased me panting and wild eyed back to my study, a wild fang in every finger, my being almost clawed out of my body by the wild thing I had met in the woods.

Wildness is the theme of the sanctuary, its first and chief concern. It is for wildness more than for any other thing that we will haunt it. The wild life sanctuary is to be a refuge for wildness, and to impart wildness to our conventional urban lives. This is something more than bird protection. A law to save the arbutus will not accomplish the end of wildness. An indefinitely closed season on deer or quail is not the way to wildness. A locality must be indefinitely closed, an area saved and all of the wild things in it, a piece of natural country large enough to contain the spirit of wildness, the local spirit, where it may blow, as today, if it will, or brood as in some golden October day, or sing, or lure, or slip to cover, as it does in Springtime from those who hunt too hard for species and specimens, and miss the entrance to the woods on account of the different kinds of trees.

A pair of wild ducks brought off a brood of young last Spring in the Boston Public Garden from some-

where under the willows along the over-bridged and much becurbed pond. They gave a wild touch to the very tame and cityfied garden. Another touch of wildness is given to the garden by the tropic plants in tubs: the palms, the cacti, the rubber trees—a wildish, rather than a wild, touch, a fantastic, operatic wildishness in Summer, just as in Winter the bare head of the benign Edward Everett Hale gives a wildish touch to the garden when that bare head is heaped with snow.

But neither Summer nor Winter is there a glimpse of real wildness about the Garden. Go on out to the reservation in the Blue Hills, however, and you pass from a man made world into a world as the hand of Nature left it; from all that is tame, to the certain presence of something different, something wild. What the wildness is you can hardly tell. You are clearly aware of it, though how you are aware of it is difficult to say. Everything is strange and alien, and doubly so at night in Winter, yet all of it is hauntingly familiar, as out of some distant childhood, some ancestral past.

The shadows of bare limb and bole
Upon the moon-blue snow,
Are beams and rafters of a house
You lived in long ago.

THE RED-SHOULDERED BLACKBIRD
They are in noisy convention in the sanctuary in April. To the left is its nest

Different from the park, the wild life sanctuary is different also from the natural history museum in every respect. The two institutions are neither rivals nor substitutes for each other. Nor are the sanctuary and the wild animal zoo. The sanctuary is rather the extension, the application and the proof of the park, the museum and the zoo, a kind of local, living expression of them, and related to them about as a singing thrasher in the top of a tasseled hickory is related to the skin of one, with open bill and cotton throat, against a painted April background.

The real work of the museum is not on show. The American Museum of Natural History in New York is one of the greatest scientific laboratories in the world. It is the center of zoological expeditions that explore the utmost earth and sea. To the sight-seeing public it is only a place of specimens. Its appeal is to the intellect, not to the imagination, except where its exhibits are grouped in habitat backgrounds.

In the sanctuary nothing is really on exhibit, and the appeal is first to the imagination. Here are living things, but no specimens. It may be the dew upon the grass and the spider-webs which one morning is the show. Or it may be the melancholy quaver of the toad, or a whiff of wild azalea, the snap of a twig in the thicket, the drift of Summer clouds and thistle-down and aspen leaves upon the brook; or it may be a mocker singing in the muscadine, or the sense of freedom, or the shape of dreams, or

. . . "that blessed mood,
In which the burden of the mystery,
In which the heavy and the weary weight
Of all this unintelligible world,
Is lighted" . . . . . .

The museum is for instruction; the sanctuary is for wandering, for watching, and for escape. It is a place on whose wild trails the pulse may quicken, in whose silences the imagination may be stirred, by whose directer ways our own ways may be straightened, by whose simpler standards our own may be restored.

Originally the museum was a place dedicated to the muses, hence a place of study, then a repository of the materials of study, as it is today. The sanctuary is still dedicated to the muses, but more to Pan, the god of forests and their wild life. It is for study; but it is more for meditation and adventure and self discovery. It is dedicated to the spirit of all wild things and places rather than to their names and orders.

Had I the choice of accepting for my town the gift of a natural history museum or a wild life sanctuary

I should take the sanctuary as essential, seeing the museum as very interesting and instructive. The famous Master of Rugby, on being asked what study he would give his boys, if he could give them but one, answered poetry. But isn't it geometry which seems to lie at the bottom of civilization? And shouldn't Master Arnold have answered, mathematics? Perhaps the bottom of civilization rests upon a bottom, upon something broader and more enduring than civilization itself. I suspect it does. That something is the eternal spirit of man, the natural, elemental thing he is, whose eternal need is Nature. Let the boys of Rugby, let all boys and girls have poetry and Nature first, and frequently forever; then with mathematics let them cabin and confine themselves within the precise walls of civilization.

So before knowledge of natural history I would put lore of Nature. And before the natural history museum I would put the wild life sanctuary.

> "One impulse from the vernal wood,
> May teach you more of man,
> Of moral evil and of good,
> Than all the sages can."

There is no comparing of the initial costs or costs of upkeep of the museum and the sanctuary. The modern natural history museum must make a million dollar start. It can be set up and maintained only in our richest cities. Whereas I am rich enough to give my town a ten-acre wild life sanctuary. I have recently bought wild land here for fifty dollars an acre. If it were rockier than it is, boggier than it is, wilder and worth still less than it is, it might be priceless for a sanctuary.

One acre will do. I have at least fourteen acres all told in my piece. It does not require much land, though the more the better. "You tie some suet to a tree, you put a dish of water on the ground, and you scare the cat away. That is a bird sanctuary"—according to the Audubon Society. So it is; and a very good one, too. But that is not enough land for a wild life sanctuary. One acre will do. Ten will do ten times better, usually. One hundred acres are ten times better still. One thousand acres, if natural, and covered with a wild growth, if they embrace a pond, a marsh, old growth timber, hilly land, and—but they never do, or seldom do, because this wild old world isn't quite a perfect world, not even for us who poke about the woods and do more or less dreaming!

The sanctuary will entail some cost for maintenance; posting, guarding, trail cutting and the like. The fewer trails cut the better, and they had better be tramped out. Some seed-bearing shrubs for the birds may have to be planted; grain and suet put out for the winter birds; but none of these things need be handled so as to make much cost.

A new sanctuary just established near my home, and in which I am particularly interested, has been deeded to The New England Federation of Bird Clubs, an incorporated body; while the upkeep of the sanctuary has been turned over to our local South Shore Nature Club, whose members live close by. Ownership by the incorporated federation simplifies all legal matters in connection with the sanctuary, and makes it possible, on the technical ground of education, to exempt the land from taxation.

From one side of the country to the other the sanctuary movement is rapidly spreading. Here in Massachusetts land is being turned over for the purpose almost faster than it can be legally handled. The state of Oregon has long been alive, or rather a few interested persons have been alive, to the need of sanctuaries for her vanishing wild forms, such as the prong horn antelope and the sage hen. Florida is setting entire towns apart for wild bird sanctuaries; and nowhere more than in Illinois, has the definite purpose to save what is still left of wildness been undertaken. By private persons, by groups of persons (as in the Chagrin Valley near Cleveland), by towns and cities and states, and by the Federal Government most of all, the sanctuary idea has been laid hold of, though not yet clearly has the idea of wildness been grasped and the prime need of saving it before it slips to cover and is forever lost from our landscape, and from our lives and from the art of our country.

A FINE SPECIMEN OF *CROTALUS OREGONUS*
The Pacific rattlesnake of Southern California is very common and widely distributed

The Pacific Rattlesnake

by Charles M. Bogert

Member of the Herpetological Society of California

"So those are Pacific rattlesnakes, are they? How many rattles does that one over there have?"

"Do you mean that one over there by the cholla cactus?" I asked, pointing to a well-marked specimen I had received the day before. "That one has eleven rattles, more or less a remarkable set for a Pacific rattlesnake."

"Eleven rattles? Is it eleven years old then? I didn't know snakes lived that long."

This is typical of the conversation when some person unacquainted with snakes first views the rattlers I have in captivity. As far as known, the rattlesnake has no definite age limit, but lives until killed by some of its enemies, and it has many, including some species of hawks, the famous road-runner, other ophidians such as the king snakes, besides man, who is, of course, its worst enemy. In spite of their numerous enemies, individuals are still to be found that are over eight years old judging from their rattles.

As a matter of fact, a rattlesnake does not get an additional "button" each year on his rattle, but a new segment each time the reptile sheds its skin. Under normal conditions this is usually done three times a year. In especially dry or poor years it may shed the skin only twice. The age in older specimens cannot be estimated, because generally after the third or fourth years the older rattles on the end become worn and fall off. It is only possible to estimate the age of the reptile from the segments of the rattle when that appendage is of a tapering character and still possesses the original "button" of the snake's birth. The growth of the snake is indicated by such a rattle in the increasing size of each ring from the button to the tail. By allowing three rattles for a year, the age may be determined with reasonable accuracy. The old specimens that have lost an uncertain number of joints including the button have the segments in their rattle nearly all of uniform size. They have then ceased to grow. The average set of rattles is seldom composed of more than six or eight, and in the smaller species usually not that many. On a fine old specimen of a red diamond rattlesnake, *Crotalus atrox ruber,* from San Diego County, California, I found but four rattles. Rarely a rattler has been found with as many as seventeen segments. Museum specimens frequently have more but it might be well to say that it is a simple matter to snap different sets of rattles together.

There are some thirteen species of rattlesnake in the United States and the majority of these are found in the southwest, five of them in Southern California. The most common and also the most widely distributed of these is the Pacific rattlesnake, *Crotalus oregonus,* found from sea level to over nine thousand feet elevation; from some of the driest regions in the desert to

the dampest regions in the mountains; and even on some of the islands off the coast of California. There are two phases, a black one of the mountain regions and a light one in the desert and the valleys. An intermediate type is sometimes noted in the foothills.

The Pacific rattlesnake is not a large species, the majority of the specimens being less than four feet long. An exceptionally dark specimen captured in the San Bernardino Mountains measured four feet two inches. The black phase is larger than the lighter one of the desert as a rule, but the light phase is more vicious in its general demeanor. Though never actually attacking it puts up such a show of fight when disturbed that its attitude is enough to warn even a person unacquainted with the reptile.

CHARLES M. BOGERT

EXPLODING THE HAIR-ROPE MYTH

Caught in the act of proving some people liars. The rope bothers not at all

When surprised, a rattlesnake usually hastens to retreat, but if overtaken or cornered it throws its body into a fighting coil and stands its ground with the neck in a sharp oblique bow held some distance above the loose coils. The entire attitude of the reptile is threatening. When becoming particularly infuriated it sometimes makes quick vicious jabs in the direction of the enemy who, in most cases, knows enough to keep his distance. Its threatening attitude soon gives way to a good-natured laziness in capitivity and, if he does so gently, one may handle it with little fear of being bitten.

CHARLES M. BOGERT

A FINE SET OF RATTLES, THESE

A Pacific rattlesnake with a tailpiece of thirteen rattles and a "button"

Rattlesnakes rattle only when excited or frightened. They do not rattle as a "warning." They are not always excitable; in many cases they do not rattle even when attacked. But at times I have had a rattler disclose his presence by rattling when twenty feet away.

Like most other inhabitants of the desert, the rattlesnake seldom moves around during the day, but does most of its hunting during the late afternoon and during the night. On a trip to the Mojave Desert during the month of September, I returned by way of the southern portion known as Antelope Valley. About ten o'clock while passing through a district infested by the kangaroo rat, an interesting little rodent although a pest in some sections, within the same quarter of a mile I discovered no fewer than two Pacific rattlers and a Pacific bull snake, *Pituophis catenifer*. One of the rattlesnakes was engaged in the process of swallowing an unusually large kangaroo rat. His large mouthful rendered him quite harmless until he was able to disgorge the rat. During this time I handled him without danger, much to his disapproval, which he showed by rattling furiously all the time. I believe I never saw a more infuriated snake. Yet who can blame him? Any one who feeds no oftener than a rattlesnake does and then is interrupted during his meal has cause to be rather angry, for a rattlesnake seldom feeds more than three times a week. A meal consists generally of one rodent of a size as large as he is able to swallow. I brought this specimen back and in course of two weeks he became quite good natured.

The rattlesnake young are born alive and eggs are not laid as is the case with the majority of snakes. It hibernates during the winter months but is sometimes seen as early as March. Its food consists entirely of warm-blooded prey such as squirrels, rats, mice, and gophers. So one can easily see that aside from being poisonous it is extremely beneficial. Like most ophidians the rattlesnake swims well but does not seem to enjoy being in water. Rattlesnakes taken on the desert miles from water drank when in captivity only when the water was sprayed upon them, as well as on the rocks in their cage. This was accomplished by sucking the water off the rocks and sometimes off their own backs. One individual continued drinking for forty-five minutes on one occasion. They refused to drink from any receptacle. This would seem to indicate that they relied upon an occasional rain for their water.

All rattlesnakes have a wonderfully developed poison apparatus, for use primarily in killing their food and secondarily as a means of defense. This consists of a pair of poison glands and a pair of hollow fangs. Each fang is attached to a separate gland and is capable of individual movement. When not in use they are held back under a sheath-like cover attached to the roof of the mouth. The fangs are shed regularly and should one

become broken or be pulled out another one will in time replace it. Their prey is always killed by means of their fangs and then is swallowed in usual snake fashion, head first always. They have a very powerful digestive system easily capable of digesting hair, hide and all.

I have lived in and traveled through country infested with rattlesnakes and have never been bitten and I never worry about it one way or another. I have always found them glad to get out of my way, for they have no reason to bite a person other than in defense.

The old method of "keeping rattlers out of camp" by encircling their camp at night with a horse hair rope is quite amusing. Actual experiments show that a rattlesnake will crawl over such a rope when by going even four inches farther he could have gone around one end.

When a person dies from a rattlesnake bite, this fact is given the widest publicity because of the news value attached to such a rare occurrence. But this leaves the impression with the average person that it is a quite common occurrence, and that the rattler is something to be dreaded. On the contrary it is a most interesting reptile, even to the person who dreads it most. For one person bitten thousands upon thousands of rattlesnakes are killed. While it may be advisable to kill rattlers found in thickly populated districts, this is seldom necessary for the rattler generally inhabits land unfit for human use. Dozens of people are killed every year by the accidental discharge of firearms. And yet no one treats a gun as he does a rattler! The only possible danger I can conceive of, that which confronts one when he steps upon a rattler unawares, is passed as soon as one catches sight of the reptile. Usually a rattlesnake can strike but about a third his length. Use your common sense. Exercise reasonable caution and give your curiosity a chance. Don't become hysterical and think you must batter the poor snake to death with rocks or a stick. Watch the reptile for a while and notice some of its good points. His one bad point has been given enough publicity.

AN ANCIENT TREE

by R. N. Davis

Fossilized tree trunks are not rare in the strata adjacent to the seams of coal but trees standing erect, as in this picture, are quite unusual. This tree was revealed when workmen were making a new opening into a coal mine near Scranton, Pa. At first it was thought that the tree could be dug out and removed to the museum but a little examination showed it would not hold together. The interior of the tree seemed to be of the same kind of shale as that outside and was too fragile to be removed entire.

The flattened tree trunks usually found lying horizontal to the coal seam possess considerable strength and can be removed quite readily. Their flattened form is readily explained. When the tree fell into soft mud other mud was deposited upon it and the pressure flattened out the tree before the wood tissue was entirely displaced by stony material.

This erect tree must have been preserved in quite another way. Apparently it was killed by its base being flooded and by the rapid deposit of sediment. Probably the outer part of the tree was very hard while the interior was soft like some present day palms. As the mud layer grew deeper the interior of the tree decayed and at last an opening decayed or was formed in some other way so that water and sediment could pour into the interior of the tree,—the outer shell acting as a mold. Later on the heat and pressure changed the wood of the tree into coal and so the form of the tree is preserved as an outside layer of coal and an interior of soft shale.

A TREE TURNED TO COAL

Usually fossil trees are buried horizontally to the coal seams, but here is an exception

The trees of carboniferous time were very different from most modern trees. There were no trees like beech, sycamore or linden. The most important trees were the ancestors of the lycopodiums or club-mosses which we gather for Christmas decorations under the name of "ground pine". These trees are lepidodendrons and sigillaria. Another type of tree of smaller size is now represented by the equisetums or horsetails. These ancient trees are called calamites.

HINTS AND HELPS
FOR
HOME and GARDEN

NOVEMBER

When the artificial heat is started in the house, the ferns and other house plants will suffer. Be sure to keep them in a comparatively cool place so that they will get accustomed to the heat gradually. The sudden dryness of the atmosphere must be offset by an occasional spraying of the foliage or fronds with water.

Cyclamen and begonias are fine plants for the winter garden, as they bloom continually for a long time. They thrive best in a cool room. Over-heating is unhealthy for plants as well as for human beings.

Most of the plants in the winter garden require a great deal of sunlight. Be sure not to place a tall plant nearer to the window than a short one so that the latter will be shaded by it. Every few days the plants must be turned around so that they will not grow lopsided.

* * *

Perennials must be protected now, lest they suffer from the alternate freezing and thawing of the earth. Manure makes a warm covering, but there is some danger of over-heating and matting down. Clean straw makes a very good mulch; and dead leaves mixed with twigs to keep them from becoming soggy and heavy are excellent. Rhododendrons and laurel must have a mulch of leaves.

It is time to protect the roses. Hill up the soil around the plants to about six inches in height and then cover the tops with straw or brush. If you live north of the latitude of New York City, tea roses must be further covered by bending down the twigs before they have become stiff from the frost and covering them with sand or very light earth.

* * *

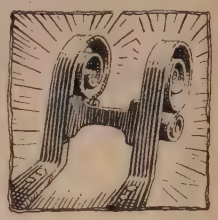
Summer grass can be easily raked up now, after it has been killed by frost. Holes in the lawn must be filled in and grass seed planted, if the weather is not too severe. If you have room, dig a pit in the ground to fill with the dead leaves and next Spring you will have a splendid top covering of decayed vegetation for the perennial beds and the wild garden. A barrel makes a very good container for leaves too. An easy method is to rake up the leaves first, then get a large square of burlap or canvas and rake the leaves on top of it. Then pick up the corners and carry the leaves wherever desired.

Prune the raspberry bushes by cutting out the old wood and the weak new wood.

The storage cellar must be kept dry and cool. A warm cellar will ruin any bulbs or vegetables stored nearby.

* * *

New trees set out in the Fall should have the earth heaped up around their trunks to prevent water from settling around the roots. The consequent freezing of this water does serious damage to the root systems.



When the potted chrysanthemums have finished blooming, cut the tops off and store the roots for the Winter. In potting new plants be sure to have good drainage, lest the soil become sour.

* * *

Do not delay in hanging up suet in your trees and putting feed in your seed trays for the birds. Let them know that you can be depended upon for food during the Winter. Oatmeal is a favorite of many birds, and makes a welcome addition to the ordinary seed mixtures. Be sure that the mixture contains some sunflower seeds, as these are the ones which the cardinals prefer.

* * *

Have you brought in the goldfish from the outdoor pool? Be sure to do so before the fish have burrowed into the mud at the bottom of the pool. If the pool is over a foot deep and has plenty of soil at the bottom, goldfish will often winter over successfully by "digging in."

All iron work, such as foot scrapers and weather vanes, should be painted before the Winter sets in, in order to prevent subsequent rusting.

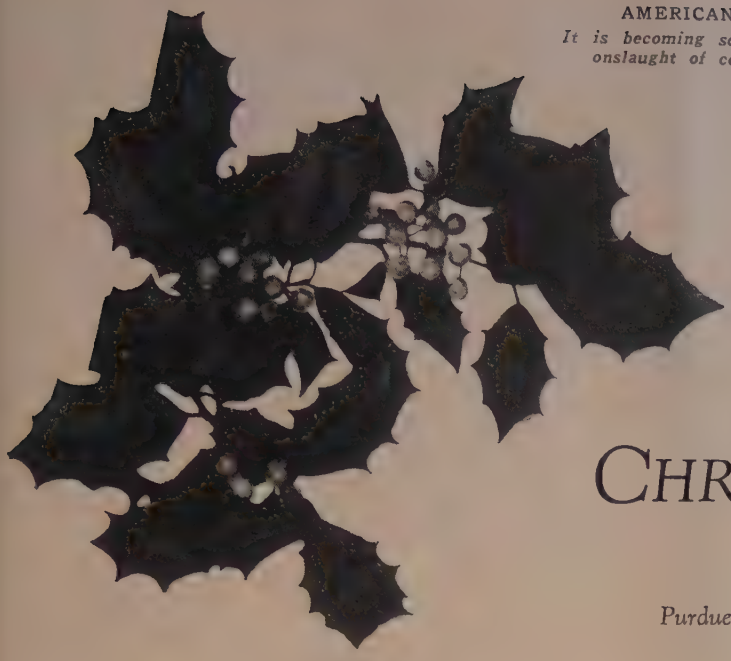
If you live north of the latitude of New York City, you should cover your boxwood with a framework and burlap to prevent weighting down by the snow.

The garden will benefit by a thorough spading in the late Fall. This will upset and kill the grubs and insects which have burrowed into the ground for the Winter.

* * *

Plant deciduous shrubbery now. Be sure that the hole is large enough for the roots to spread out, and tamp the earth firmly about them several times as you fill in the hole.

Do not complete the winter covering of the flower beds too early, as a late warm spell would do serious damage in over-heating the plants.



AMERICAN HOLLY
It is becoming scarce before the onslaught of commercialism

Vanishing CHRISTMAS GREENS

by Albert A. Hansen
Purdue University, Agricultural Experiment Station

Photographs by E. M. Kittredge

IN THIS materialistic old world of ours there is nothing more beautiful than the Yuletide spirit, and in the preservation of that spirit holly wreaths, ground pine sprays, mistletoe and other Christmas greens play a large part. Be it fortunate or unfortunate we cannot get away from the fact that the Christmas season arrives during midwinter, when in the North, most vegetation is shriveled and dead, because the evergreens include less than five per cent of the mass of our flora. And the simple facts of the case are that the rapidly diminishing five per cent cannot long stand the exhaustive Christmas drain under the present hit-and-miss, thoughtless and unorganized manner of exploitation. In other words, unless some change is made in our present shiftless method of supplying the Christmas trade with greens, we can look forward with certainty to practically greenless Christmas celebrations in a future that is not far distant.

Greenless, colorless Christmas holidays would rob the Yuletide of much of its attractiveness and the children of one of their greatest joys. The fact that many members of our Christmas flora are getting perilously close to the verge of practical extinction over widespread areas has been realized by conservationists and scientists for many years but, like Mark Twain's weather observation, nothing seems to have been done about it.

Let us get down to specific examples. There is mountain laurel, foremost of holiday greens throughout the populous East. In large areas in New England, and within wide radii of our cities, laurel lives now in memory only. There are still many thousands of acres of this magnificent shrub scattered throughout the Allegheny highlands that, in the aggregate, are well able to meet present and future demands if properly handled and if the product is intelligently used. Right now is the time for far-sighted action instead of waiting until it is too late, since regrets cannot restore broad acres of a plant that is slow to start and lives to a ripe old age.

What do we mean by the proper handling of the laurel areas? Proper handling demands that the laurel be treated as a crop to be cut over every second or third year with sharp knives in such a manner as to leave clean wounds that will readily heal while at the same time allowing sufficient growth to remain to insure complete recovery. That this is possible and profitable has been amply demonstrated. The successful handling of the great fern crop in Vermont should furnish inspiration to the fortunates who own acres of laurel. A large share of the graceful fern fronds with which florists set off beautiful bouquets are the products of the green hills of Vermont where the wild crop is harvested every Fall in such a manner as to insure a constant, undiminishing supply. The fronds are put in cold storage (like apples and other fruits) where they keep fresh and green for a long period. By sane treatment the Vermont fern beds have maintained vigor and productiveness and there is no reason why laurel areas should not be treated likewise. At present much of the laurel is collected

OREGON'S STATE FLOWER
The Oregon grape, whose existence is endangered by the Christmas greens demand

THE MOUNTAIN LAUREL
Its evergreen leaves are among the most familiar of Christmas decorations

under contract by professional gatherers who have little regard for the protection of the crop. Instead, they enter the laurel clad hills and hack and pull thousands of tons of the lovely plant, frequently leaving a trail of desolation in their wake.

What do we mean by the intelligent use of laurel? Simply that the plant be used in moderation. We have seen many a home heavily garlanded during teas, receptions, bridge parties and the Christmas season with great masses of this waxy green laurel foliage. But this damaging practice is not limited to individuals, since many a community has publicly set the example. A case at point is the city of Springfield, Massachusetts, a community that for several seasons has celebrated the Christmas holidays by festooning the streets with many thousands of yards of laurel strands, that have delighted the hearts of the merchants by increasing business, although little thought has been given to the effect of this outlandish custom on the laurel flora. Even after the situation was clearly pointed out by the Springfield Garden Club and other Nature lovers in the community, the practice continued and precipitated lively discussion and heated argument that contributed little toward the good cheer of the Yuletide season.

Second in importance to laurel as a source of Christmas greens, particularly wreaths, is the charming little ground pine, or crowfoot, of which there are about a dozen native species that find their way to the Christmas market. Here, indeed, is a most difficult problem since the ground pines are rapidly disappearing, their place being taken on the market by artificial substitutes. This irreparable loss seems all the more regrettable since it is entirely unnecessary. Most of the species of ground pines used in the Christmas trade grow from long, creeping stems that are usually torn out by the yard by commercial gatherers. When handled in this manner, the plants are practically eradicated and many years are required before they become re-established, and in many instances they never return to their old haunts after such thoughtless and wasteful treatment. On the other hand, if the immature pine-like shoots are harvested with a sharp knife or a pair of shears, cutting at the base close to the running stem, little harm will be done if a shoot is left here and there to maintain vitality in the prostrate parts of the plant. Some day the commercial exploiter will learn this trick but it may then be too late to save large areas of this delightful little evergreen. The ground pines, unlike their namesakes in the tree world, reproduce from tiny, almost microscopic, spores instead of by means of seeds and the mortality among the delicate offspring competing with hardy seedlings of other species is exceedingly great. When to this serious handicap is added the ruthless hand of the professional picker, the odds become overwhelming and the species rapidly joins the ranks of our vanishing flora.

THE RED CEDAR
Source of cedar chests, fence posts and pencils as well as Christmas greenery

Foremost among our Yuletide greens is the American holly, that native red-berried, shiny-leaved relative of the European holly around which has been associated since time immemorial many of our beautiful Christmas beliefs, legends and customs. Our earliest settlers made Christmas bright with American holly, which undoubtedly brought many a reminder of happy celebrations in the "old country," and even to this day the Americanized Italian farmer adheres to the ancient Latin custom of

decorating the stalls of farm animals with sprigs of prickly holly during the Christmas season. But this plant of tender memories will soon disappear into the limbo of forgotten things unless something is done to stem the present tide of unrestricted gathering to supply Christmas demands. One factor that is contributing to the gradual disappearance of this symbol of the days of good will is the little known fact that the holly, in common with the ginkgo, coffee tree and poplar, produces separate male and female plants and with the disappearance of the females, which are collected in large numbers on account of the brightly colored berries, the males become valueless and the doom of the species is sealed. The males, of course, do not produce berries and are therefore not as eagerly collected. It is possible that with the increasing scarcity and the insistent demand, cultivation of the American holly may become commercially practicable since the plant can be reproduced by means of cuttings, and we may live to see many an abandoned, run-down, field made resplendent and profitable with a crop of holly destined to supply the Christmas trade.

After years of indiscriminate exploitation it is not to be wondered at that our eastern Christmas flora is becoming sadly depleted, but it is somewhat of a surprise to learn that the same problem is becoming acute in the youthful West, particularly along the Pacific coast. In Oregon, for example, among the most popular Yuletide decorations is the Oregon grape, a close relative of the disease disseminating barberry so common in the East. Since its adoption as the floral symbol of the state of Oregon the demand for this native species has become great, a demand that, with the quantity used during the Christmas season, has jeopardized the very existence of this fine plant. In California the prime Christmas favorite is the bright fruited toyon or Christmas berry, but again we learn that this formerly abundant plant is becoming increasingly scarcer. This is due not only to the demands of the Christmas season, but also to all-year-round promiscuous picking, which has greatly increased with the advent of the automobile and the penetration of good roads into practically all parts of the golden state. So acute has the situation become that the Wild Flower Conservation League of California found it necessary to take up the cudgels on behalf of this native favorite, and a well-organized campaign has been waged in its behalf. As a result many a local magistrate has enforced protective measures and a number of severe penalties have been inflicted against particularly flagrant cases of unrestricted and wanton gathering of this cherished Christmas berry. Even in comparatively remote regions of California wild holly, toyon and other greenery has been threatened by unrestrained commercialism. On the famous Mount Tamalpais and in the Muir Woods, the rhododendron, holly, toyon and other evergreens suitable for Christmas usage when scientifically harvested have been ravaged by the thousands of tourists who annually visit these beauty spots. To meet this situation the Tamalpais Conservation Club has been organized with the object of protecting the natural beauties of the gifted Tamalpais region.

THE GROUND PINE

If the creeping stem that runs down the middle of the picture is left little harm results

THE SPOTTED WINTERGREEN

Its handsome, variegated leaves are used to beautify many expensive wreaths

There are two popular members of the Christmas greens company for which we hold no brief—the common Christmas tree and the mistletoe. Although much has been written regarding the depletion of our forests due to the

annual toll of six million trees to satisfy the Yule demand, the removal of many of these trees actually improves the forests. Furthermore, the entire Christmas harvest is insignificant when compared with the amount of wood destroyed by fires or with the quantity used during a season to supply the pulp for a single metropolitan newspaper or a great national magazine. We are content to accept the verdict of the Forest Service that the young firs, spruces, pines, cedars and hemlocks probably could be put to no better use than contributing to human happiness in the rôle of Christmas trees. According to the government forester, the cutting of small trees for Christmas is not necessarily a menace to our forests although the young evergreens so used should be cut discriminately with a proper regard for the welfare of the forests and property rights. One feature of the Christmas tree trade that rankles deep in our heart, however, is the profligate waste represented by flooding the market. Some years ago the Philadelphia newspapers reported the destruction of several hundred thousand Christmas trees during the active buying season because the over-supply had caused greatly decreased prices in the Quaker city. This is by no means a rare occurrence and it would seem that an excellent conservation opportunity exists in the studying of market needs for the Christmas tree trade to prevent the waste of over-loading.

HEMLOCK SERVES MUCH

It is popular both for greens and as Christmas trees at the Yule season

As far as the mistletoe is concerned there seems to be no likelihood of a scarcity of this aid to bashful swains so long as there are trees and birds in America. The mistletoe is a parasite on the branches of various species of trees, being particularly plentiful on oaks, and the seeds are commonly distributed by birds. A little mistletoe goes a long way and the demand will probably never be sufficiently great to seriously endanger the species.

There are a number of other attractive plants that supply the demand for Christmas decorations, plants such as the delightful winterberry, the popular smilax and the commercialized galax, that need to be conserved to prevent disappearance. Since the scarcity of many of the Christmas plants has been felt substitutes have appeared in increasing numbers and a number of these substitutes fill the bill in a very satisfactory manner. The shortage of the natural product has also been responsible for the appearance of greatly improved preservatives with which wreaths and other greens are treated in such a manner that they can be used from year to year.

We can all help to conserve our vanishing Christmas greenery by using these plants with moderation and by utilizing some preserved material and substitutes. If we all adopt the slogan "let half of our Christmas greens this year be substitutes" and actually practice this preachment, we will do much to conserve the natural supply of winter greens and so add immeasurably to the Christmas spirit of untold future generations.

J. Z. RINE

"HELLO, EVERYBODY"

W. L. FINLEY AND H. T. BOHLMAN

MOTHER REDHEAD AND HER FAMILY
This duck gathers at times into large flocks with the canvasback or alone with its kind

SOME INTERESTING DUCKS

by Harry C. Oberholser

of the U. S. Biological Survey

THERE is a certain charm about waterfowl that is absent in other birds. Scarcely any one, be he Nature-lover or not, can fail to be thrilled by the myriads of ducks and geese as they rise with a roar from the water, and swirl into the sky like a great cloud of smoke or trail off in long swiftly-moving lines.

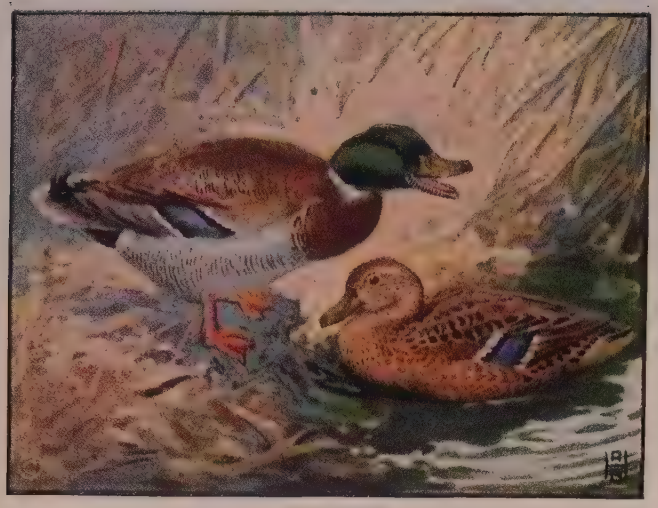
To the sportsman, whom these wonderful birds lead into the marshes and lakes, they have just as strong an appeal, and they furnish opportunity for one of the most interesting of outdoor pursuits. To insure that these birds shall continue to please and inspire those who come after us, is a duty that we must not evade. Careful protection is needed now if we are to preserve what is left of the hordes of wild-fowl that formerly frequented our land.

To do this intelligently, we need more information regarding the numbers, distribution, and migration of these birds. To gather this the Biological Survey now purposes to inaugurate monthly censuses throughout the United States and southern Canada, and also in Mexico. In each locality where it is possible to enlist reliable observers, the birds will be counted, or when too numerous will be estimated, on the same day throughout this whole region, so that there will be no possibility of the same birds being counted twice. At the beginning of these series of monthly censuses the areas where the greatest concentration of waterfowl takes place in either summer or winter migration will be covered, and later the censuses will be extended to all available parts of the continent. Through these simultaneous censuses it should be possible to obtain a good idea of the total population of ducks in North America and also much information regarding their seasonal movements, as well as their fluctuations. All of the ducks, geese, swans, and the coot, will be included. Some of the more interesting of these birds are illustrated in the plates accompanying this article.

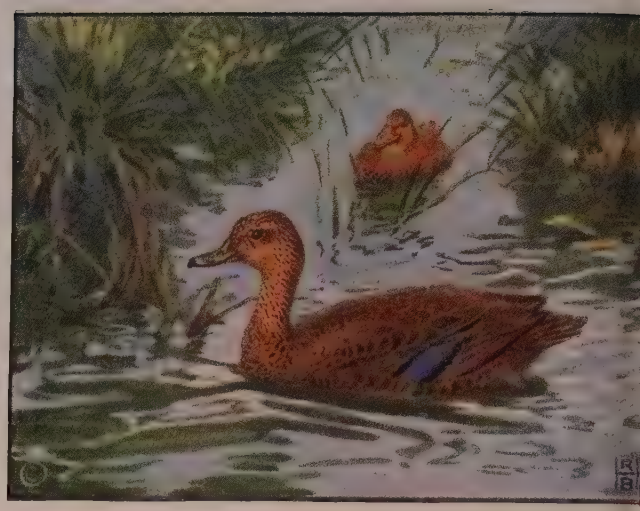
The canvasback is perhaps the most famous of all our ducks. Sportsmen and epicures sing its praises, and it is equally attractive to the naturalist. It is one of the fastest of ducks, and moves often in great flocks on the fresh water lakes, larger streams and less brackish bays and inlets. It rears its young from Alaska to Nebraska, and winters chiefly in the Middle Atlantic and Gulf States to Mexico. Its food of wild plants, including the famous wild celery, is obtained mostly by diving. Its nest is on the ground near water, usually in marshy places, is composed of grass, and some feathers, and contains six to ten grayish or buffy eggs. Its whitish back, dark reddish head and long sloping bill serve to distinguish this bird from other ducks of similar size.

A FLOCK OF MALLARDS
This duck is the ancestor of most of our domestic ducks

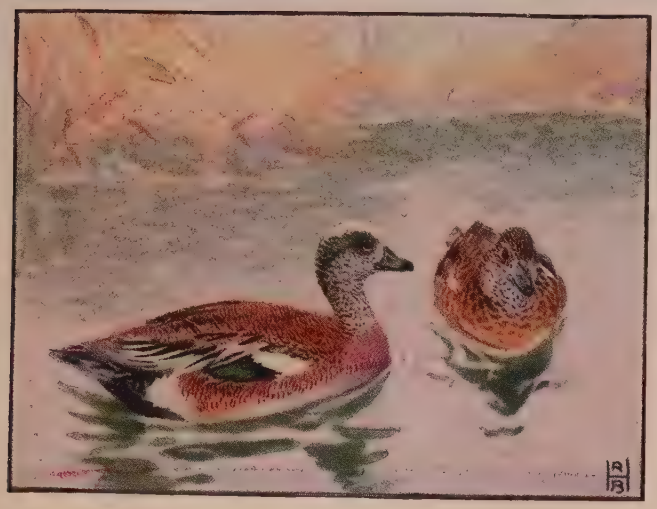
The redhead is another well-known duck and also a favorite. It gathers at times into immense flocks with the canvasback or alone, in brackish or fresh water. Its summer home is in southwestern Canada and the northwestern United States, south to Nebraska, and it winters south to central Mexico and Florida. It feeds much as the canvasback, and its nest made on the ground in marshy places or over



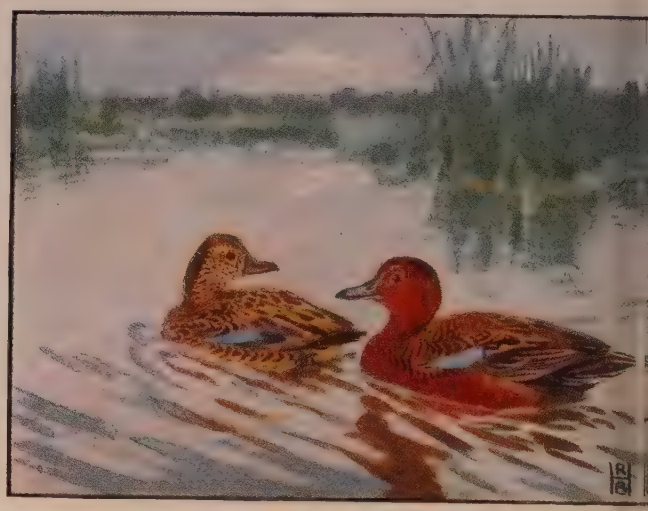
MALLARD—*Anas platyrhyncha*



BLACK DUCK—*Anas rubripes*



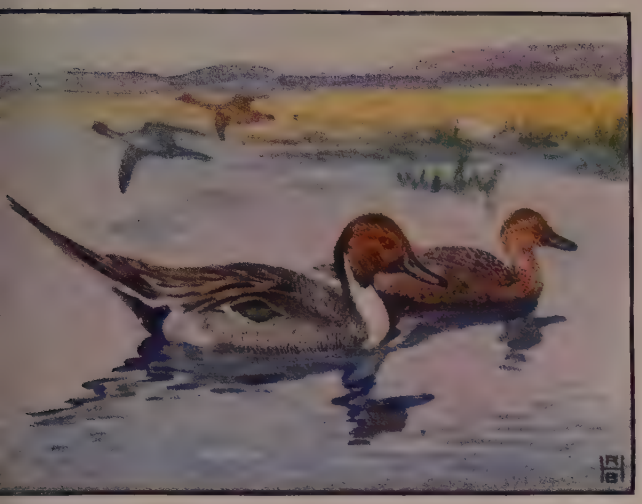
BALDPATE—*Mareca americana*



CINNAMON TEAL—*Querquedula cyanoptera*

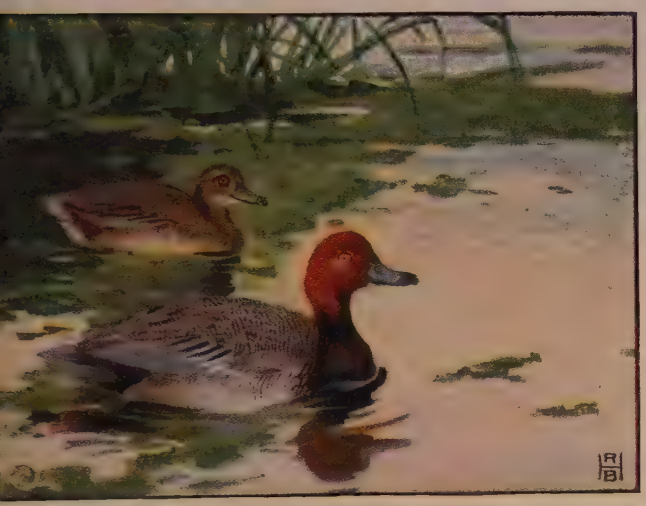
GREEN-WINGED TEAL—*Nettion carolinense*

BLUE-WINGED TEAL—*Querquedula discors*

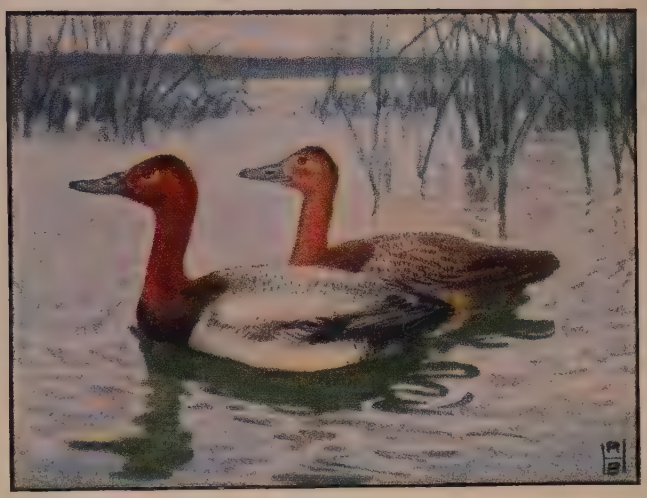


PINTAIL—*Dafila acuta tzitzihoa*

GADWALL—*Chaulelasmus streperus*

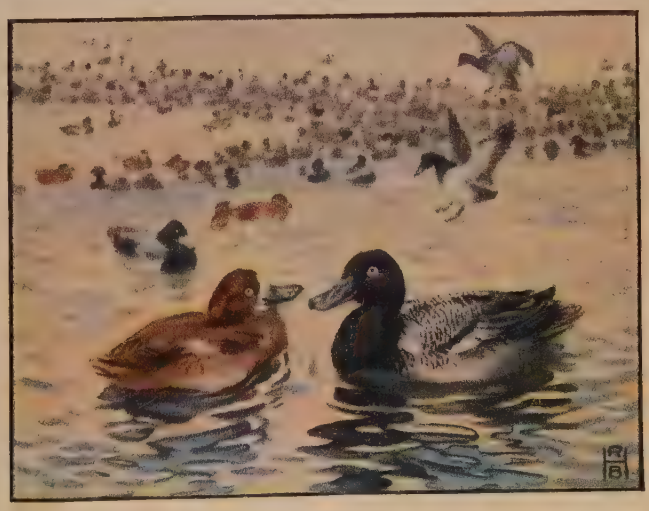


REDHEAD—*Nyroca americana*



CANVAS-BACK—*Aristonetta valisineria*

SHOVELLER—*Spatula clypeata*



LESSER SCAUP DUCK—*Fulix affinis*

water, is built of rushes, grass, down, and feathers; the creamy white eggs are from seven to fourteen in number. The male is less whitish on the back than the canvasback and seems to have a shorter head, and may be distinguished from the scaups by the less whitish back and sides, and gray, not white, wing bars. The female lacks the white on the forehead.

Only a few American ducks are better known than the lesser scaup, little bluebill, or little blackhead, as it is often called. It is abundant from the Atlantic to the Pacific Oceans, and from Alaska to Panama, breeding south to the central United States. Its frequent occurrence in numerous flocks makes it conspicuous. It is one of the typical diving ducks, and thus obtains its food of leaves, seeds, and other parts of water plants, as well as mollusks, crustaceans, and insects.

Its nest is on the ground in marshy or dry places, usually well constructed of grass, weeds, and a thick down cushion, with six to ten olive grayish eggs. The black head and neck, whitish back and sides, and white wing bars of the male easily distinguish this duck. The female may be identified by its white wing bars and white forehead. The greater scaup duck, or greater bluebill, is similar but is larger and heavier.

As the ancestor of most of our domestic ducks, the handsome mallard is known to every one. It occurs in North America from the Arctic south to Panama, in summer not much south of the central states. It is also common in Europe. One of the so-called "puddle ducks," it usually gathers its food by tipping up in shoal water. This consists of seeds, water plants, acorns, insects, and mollusks. Its nest is usually on the ground in a dry situation, well built of grass and feathers or down, and with six to ten drab or greenish eggs. This bird is distinguishable by its large size and rather long neck, the drake by its dark head and rather light gray appearance; in rear flight view, often by the white in the lateral tail-feathers. The female is rather light and dull colored without conspicuous white wing patches.

The black duck, or black mallard, is one of the abundant ducks of our eastern states. Its range extends to Hudson Bay and Labrador and south to Texas and Florida, though it does not breed south of North Carolina. Though primarily a fresh water duck, it is common in coastal inlets. Its food is largely vegetable, which it seeks like a mallard. Its nest is built near water, in grass or rushes, of weeds, grass, and down, and has six to eight buffy eggs. The bird is about the same size as the mallard, and somewhat heavy of flight. At a little distance the bird appears almost black, and this, with the pure white area under the wings, serves to distinguish it from the mallard and other similar ducks.

One of the larger and least known of the so-called surface feeding ducks is the pintail, or sprig-tail, numerous in parts of the West. It inhabits both Europe and North America, in the latter ranging from the Arctic coast to Panama, but in winter not north of southern Canada. It feeds like the mallard, tipping up with tail in air in shallow water to reach its food of seeds, water plants, mollusks, crustaceans, and insects. Its nest on the ground is composed of grass or other vegetable matter, and often lined with down. The five to twelve eggs are light grayish olive. The long neck with a wide stripe on each side easily marks the male; and both male and female differ from other ducks on the wing by their long thin bodies and necks and thin wings.

The gadwall or gray duck, although relatively inconspicuous, is nevertheless attractive at close range. It is found in both the Old World and North America, in the latter ranging from southwestern Canada to central Mexico, though not breeding south of the United States. It is most numerous in the Great Plains area. It feeds in shallow water or on dry land like the mallard, eating the foliage and other parts of water plants and also a few snails. Its slight nest, built on the ground, is of grass or rushes, lined with down; the seven to twelve eggs are creamy buff. The gadwall is a medium-sized gray duck identified when flying by the conspicuous white patch on each wing.

The baldpate, with a white-topped head, is known also as American widgeon. A favorite with many, it is found from Alaska to Central America, and breeds mainly north of the middle states. Its food is mostly vegetable, but includes also some mollusks and insects. It builds its nest of grass and down in a marsh and lays six to twelve buffy eggs. It is of moderate size with much white below and on the wing.

The shoveler, or spoonbill, well named, from its strange bill inhabits America from Alaska to Panama, breeding south to Texas; it occurs also in Europe. It feeds on snails, crustaceans, insects, worms, and grasses. Its nest, built on the ground, in marshy places, holds from six to ten greenish gray eggs. The male with its conspicuous black and white plumage and the large long bill is a striking figure.

Our teals are small and swift, the drakes all beautiful and graceful in air or on water. The blue-winged teal is numerous on the Great Plains, but less so in the eastern states. It ranges widely, breeding from central Canada to the southwestern states and wintering south to Peru and Chile; it is an early autumn migrant. Its food is mostly vegetable, but includes also mollusks and crustaceans. The nest is in a meadow or a grassy lake shore, built of grass and down, with six to twelve pale buffy or greenish eggs. The drake has a light grayish blue wing patch, and a white crescent at the base of the bill, and a white posterior patch which shows when the bird is on the water.

Another handsome duck of the rivers and lakes of the West is the cinnamon teal, which breeds north to southwestern Canada and also in extreme southern South America. In winter it is found north to the southwestern United States. It feeds on seeds of water plants, and on insects and snails. Its nest is of grass and feathers or down, on the ground near water, with six to twelve buffy or creamy-white eggs. From the other teals the male is distinguishable by its reddish plumage, but the female is much like the blue-winged teal.

The green-winged teal is another attractive duck and one of the swiftest of our species. It ranges from the Arctic Circle to Central America, but nests chiefly north of the United States. In the Canadian and Alaskan wilds it builds a nest on the ground amidst the grass, formed of the grass stems and lined with down or feathers. The five to twelve eggs are greenish buff. The bird feeds chiefly on seeds and the foliage of water plants. Its small-sized, narrow bill, reddish head, white crescent in front of the wing, and lack of white in the wing itself, easily identify the male. The female is much like that of the blue-winged teal, but smaller.

AN ANTIQUE
The work of the furniture beetle

More Uninvited Insect Guests

Helpful Advice on Prevention and Destruction of House Pests

by Thomas E. Snyder
Entomologist, Bureau of Entomology, U. S. Department of Agriculture

A SHOE VICTIM
Termites made it unfit for rainy weather

MANY INSECTS have been uninvited "guests" in the homes of man from prehistoric times to the present day civilization. Man's caves, cliff dwellings, wigwams, huts, hovels to mansions and palaces have afforded shelter from the elements, various degrees of warmth, protection from enemies and some form of food. Even before the advent of man, insects had utilized the shelters of others, such as dens and burrows of mammals, nests of birds and even the nests of other insects, especially those of the social insects, the bees, wasps, ants and termites or "white ants."

In the cases and "casas" of man, animals and birds, these uninvited insect guests are at least annoying or troublesome and sometimes very injurious, even endangering the structures or the lives of the more rightful residents. Hence, civilized man does not tolerate the furthering of the lives of these insects at his own cost. However, uninvited insect guests in the nests of other insects may be either injurious enemies and persecuted by their hosts, or may be harmless and therefore indifferently tolerated, or there may be a true symbiotic relationship between the host and guest insects which results to their mutual benefit.

Insect pests in the houses of man include those which directly injure man himself, or the biting and sucking insects; insects which contaminate food and thus indirectly injure man, such as house or typhoid flies and roaches; types which damage and endanger the actual structure of the house; those forms which injure or destroy furniture, wearing apparel or other goods stored within the house; and special food pests. Of course these groups are arbitrarily formed and insects in one group may overlap into others and not be strictly confined in a single class; also all insects of the household cannot be considered in a comparatively brief article.

The most injurious types of such house-wrecking insect pests are termites or "white ants," "powder-post beetles," "carpenter ants," wood-borers or "sawyers" and "carpenter bees." Both houses in cities as well as in rural regions are liable to become infested with termites and powder-post beetles, but injury by carpenter ants and carpenter bees commonly only occurs in rural regions. Damage by wood-borers or sawyers usually occurs only to rustic log cabins and rustic furniture in the country.

Since the damage is hidden and within the wood, the presence of termites injuring the woodwork of houses is usually not discovered until the annual "swarm" of the pigmented winged adults. The emergence of enormous numbers of the "flying ants" from small holes in the wood becomes a nuisance. They penetrate throughout the house, getting on the luckless human inhabitants and falling into the food. This is the colonizing, or dispersal flight of the sexual forms and is for the purpose of establishing new colonies. Occurring in the spring or autumn, this flight should serve as a warning to householders that drastic remedial measures should be taken at once in order to prevent further material damage to the building and contents.

CARPENTER BEES ARE NEAT WORKMEN
These holes in red cedar seem to prove it. They are entrance holes

The harmful termites are of two types, those which live in the ground and only attack wood indirectly from the ground and those which attack wood directly and do not burrow in the ground. The former subterranean ter-

mites require much moisture for their life which they obtain from the earth, and with which they must always maintain contact. The non-subterranean termites can exist without much moisture and are able to live in dry wood containing less than ten percent of water.

Most termite damage to buildings is directly due to improper methods of construction. Also, with the clearing of the forest—the natural home of termites—and advancing civilization, cultivation of lands, and more extensive building operations by man, termite injury has become in consequence more common and serious. This is the inevitable result of the disturbance of the balance of Nature by man.

WHAT A TERMITE DOES

Some of the subterranean kind accounted for this suit of child's underwear

A few hundred dollars additional spent in the initial construction cost of buildings may save thousands of dollars in later repairs and replacements due to termite damage. Prevention is much simpler and cheaper than any remedial measures, since after termites are once established in a building, they may be very difficult to eradicate. These repairs may be a serious financial strain to the small house-builder. As the most practicable method of preventing destruction by termites, slight modifications of city building codes are being recommended to include a few simple suggestions for excluding termites.

The principal points are insulation of all untreated woodwork from contact with the ground, either by the use of stone or concrete foundations,—care being taken to utilize only the most impenetrable grades of mortar—or by the use of timbers impregnated with coal tar creosote. The use of metal termite guards or shields over foundations is urged to prevent the subterranean termites from extending their earthlike shelter tubes up over the surface of impenetrable foundations to untreated wood above. The screening of buildings, using fine mesh copper screens on doors and windows and the impregnation of interior woodwork and furniture with zinc chloride will prevent attack by non-subterranean termites. Fumigation with a heavy dosage of hydrocyanic acid gas is a remedy; such fumigation should only be done under the supervision of an expert, since the gas is highly dangerous.

The latter two suggestions are necessary only in southern-most United States and our tropical possessions. Wood impregnated with zinc chloride can be painted or otherwise finished after treatment. In rural regions, county agricultural agents are available for assistance and advice to prospective house-builders and owners on the proper methods of construction so necessary to prevent termite damage.

The woodwork and furniture of buildings is also frequently damaged by powder-post beetles. Both softwoods and hardwoods are subject to "powder-posting" by a variety of both native and introduced wood-boring

WHAT THE GOVERNMENT LEARNED ABOUT TERMITES

One of the temporary buildings in Washington. Termites cost $140,000 for repairs during the past fiscal year

insects. When the operations of wood-boring are first begun there is then and for some time afterwards but little evidence of destruction and much injury can be done before the presence of these insects is detected, since they work silently and are hidden within the wood.

Worm eaten furniture, or furniture showing worm holes, so highly prized by antique buyers—since the worm holes show that the furniture is old—is "powder-posted" by furniture beetles. These "antique" conditions could be reproduced in a few years.

The eggs are laid by the winged adults under bark, within the wood, in pores, galleries, crevices or cracks and between where timbers are joined together. After hatching, the young larvae of the beetles feed on the cell contents for a period, then on the sapwood and in some cases later the heartwood, reducing the wood fibre to a powder-like flour and in time completely honeycombing it so that it is reduced to a thin shell that crumbles at the touch.

Evidences of attack and infestation are the flour-like powder that falls from the wood or the pellets of partly digested, excreted wood. The small round holes in the surface of the wood about the size of medium shot are where the beetles that have developed within the wood have emerged and are exit, not entrance, holes in the case of all the powder-post beetles.

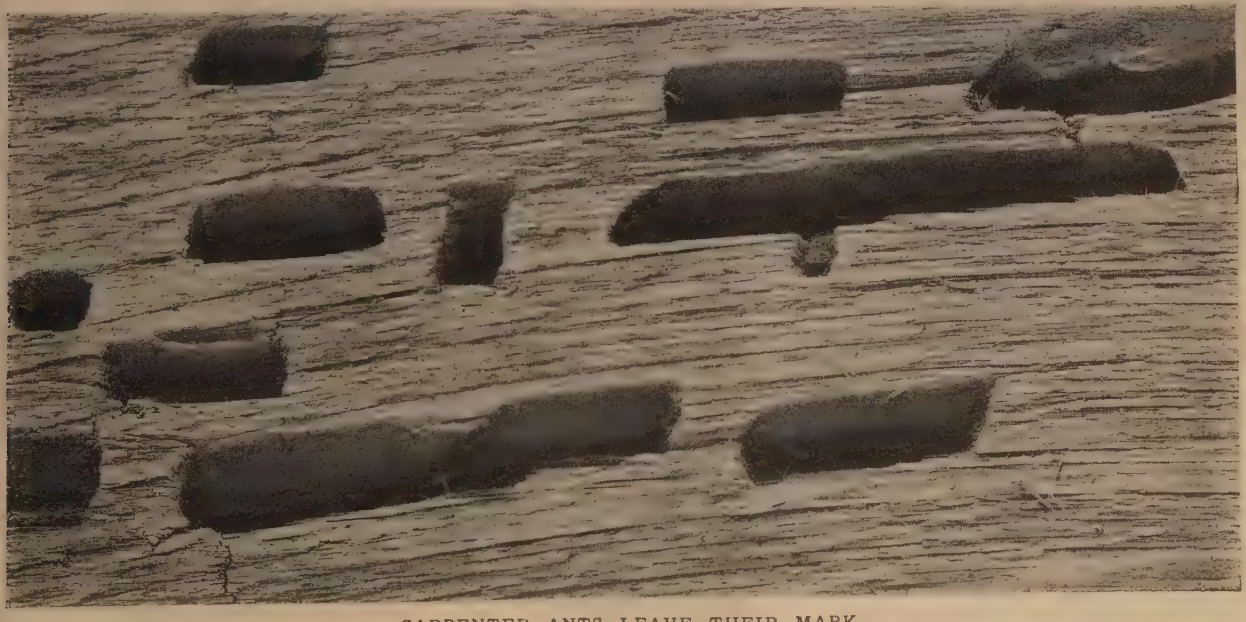
JUST RUINED
Furniture eaten by the termites

One of the most commonly known of the powder-post beetles is the so-called European "death-watch" beetle. Much superstition has been attached to the presence of this beetle in the minds of the credulous. According to fable, it watched over the dying and prophesied death to an inmate of the household where its tapping was heard —generally in the witching hours after midnight. In reality this tapping, so similar to the intermittent ticking of old timepieces, is a sex call of mate to mate, a means of communication between the male and female prior to pairing.

It was the death-watch beetle that caused so serious damage to the ancient and historic Westminister Hall in England—begun in 1097. The damage was to the old oak rafters of the roof built in 1399. This roof is considered one of the finest examples of ancient carpentry and wood carving. Repairs, consisting in spraying with poisonous chemicals to kill the beetles within the beams and to replace and face them with hidden steel frames, cost 100,000 pounds sterling. Other ancient wooden buildings have been similarly damaged both in this country and abroad, since this insect has been introduced into this country by means of commerce.

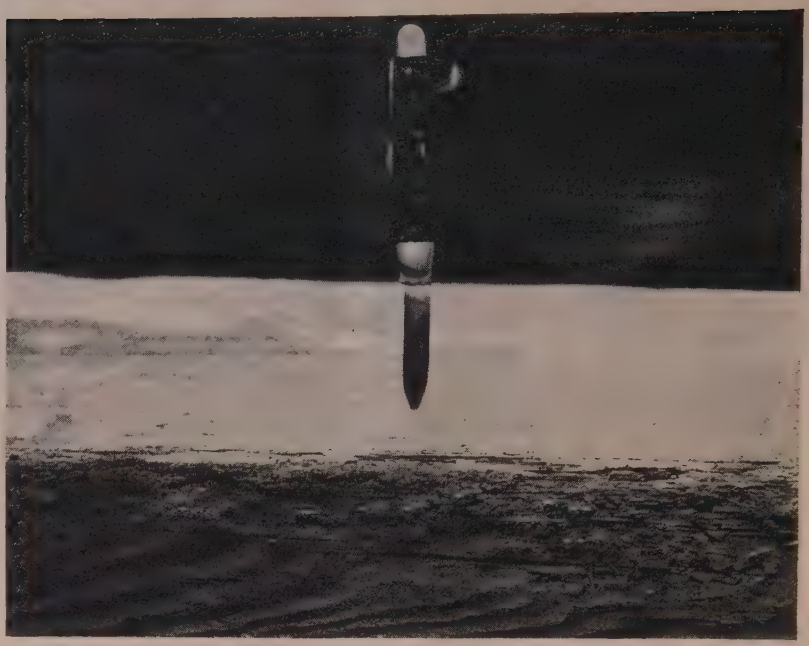
During May, 1927, an examination was made of the timbers from the roof of the White House which were being removed in repair work to the roof. The supporting timber trusses had been pulled out of place so that they no longer structurally served as trusses but carried the heavy load as beams. This condition led to the roof load causing the sagging and became dangerous. It was found that the white and yellow pine timbers had become infested by one of the Cossonid beetles in the family of weevils, one of the powder-post beetles. There have been several previous records of this insect causing similar damage to the woodwork of buildings and flooring, some of these records occuring in Washington, D. C.

The ends of these heavy timbers, probably in place



CARPENTER ANTS LEAVE THEIR MARK
These efficiently built holes in timber are enough to weaken any structure

since 1812, were badly weakened where they had been eaten by these insects and the ends were even broken off. The insect also powder-posted sound lathing attached to the infested timbers. There was no decay in some of the timbers infested by this beetle, or in the lathing. However, decay was present in the ends of some of the timbers supporting the roof of the tall portico in front of the White House. These powder-post beetles usually lay their eggs in joists or crevices of timber where there are conditions of darkness and poor ventilation.



WHITE HOUSE TIMBER EATEN INTO POWDER

The beetles had infested the ends of the century-old timbers, greatly weakening them

Impregnation treatments of timbers with zinc chloride would prevent such infestation and even coats of varnish would probably have been effective. Frequent inspection of untreated timbers is advisable, especially in old buildings. Where timbers are not structually weakened the insects can be killed where they are already infesting timbers by thoroughly saturating the wood with orthodichlorobenzene, using a saturated rag or mop, or the liquid can be applied as a spray. Several applications may be necessary to kill the insects, but this can be determined only by periodical examinations. If this chemical is used as a spray we would advise that the building be opened up since there is quite an odor to the chemical which may prove disagreeable in a closed room; also if spraying timbers overhead, care should be taken not to let the liquid drip down since it might slightly burn the face and hands and it would be especially injurious if it got in the eyes.

Woodwork may be protected from powder-post insects by coating all portions, including, in cases of furniture, backs and other interior or hidden parts, with two coats of boiled linseed oil applied hot, varnish, paints, waxes or other fillers.

If the borers are too deep in the wood, or if the wood is structurally weakened or rendered unsightly, it should be replaced with materials which are not attacked by the particular insect involved.

While ants are social insects like the termites and have various similar castes and a division of labor, few ants cut into wood and are destructive wood-borers. Those which work in wood are called "carpenter ants," but their injury to the woodwork of buildings is not as common or as great as that caused by termites or powder-post beetles. However, these ant workmen are capable of serious injury to structural timbers. A large black type and smaller, black carpenter ants are responsible for most damage to buildings by ants. Such injury is more common in wooded regions.

Carpenter ants normally nest in trees, logs and stumps in the forest, and usually invade the houses of man from such sources. They damage woodwork in a manner similar to termites, honey-combing the wood. Coarse frass or wood borings thrown out from the wood within which they are working is a means of detecting their presence, and is a timely warning to home owners.

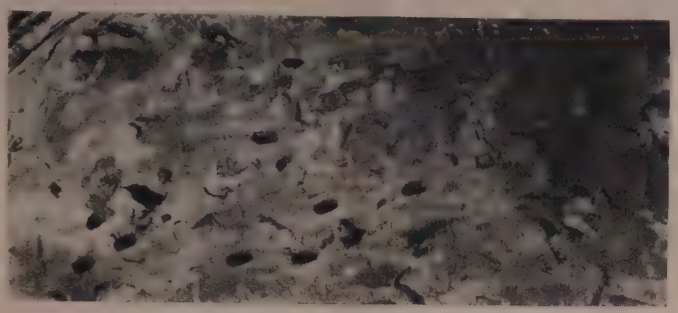
Remedial measures to be undertaken to eradicate carpenter ants from the woodwork of buildings are to clear away any decaying wood in the vicinity of the building such as old logs. Where the ants are infesting the wood, rub it with a rag saturated with orthodichlorobenzene; several applications may be necessary to kill the grubs. In case the wood is badly damaged it will be necessary to replace the affected portions.

ONE REASON THE PRESIDENT MOVED

Close-up of a picture of timber taken from the roof of the White House. The Cossonid powder-post beetle did it

If there are large holes through which the ants are extruding sawdust, it might be well to inject carbon disulphid, after which the holes should be plugged up. This insecticide is inflammable and poisonous, but with reasonable care there is no danger from its use.

Damage to the woodwork of buildings by wood-boring grubs usually only occurs in rural regions where bark edgings have been left on timbers or lumber and the wood has not been properly dried or seasoned. Such damage to rustic log cabins and rustic work furniture is especially common and constitutes a very serious loss.



A ROUND-HEADED BORER'S WORK

Boring dust or the sound of the insect at work is the only sign of danger

Woods cut at certain seasons of the year are subject to attack by borers, which riddle the bark with holes, causing sawdust-like borings to fall out and cover the wood, and by the larvae, or grubs, of wood-borers, which mine the inner bark, causing it to loosen and fall off, and which bore into the sapwood, and sometimes the heartwood, of logs, making large holes and often reducing them almost to dust within a few months. This damage causes large financial loss, annoyance, and an unsightly condition.

It has been found that by cutting the wood at certain seasons of the year and by treating it with protective, repellant, or insecticidal substances, practically all insect damage can be prevented.

In most instances the injury can be detected by the presence of the characteristic piles of reddish-brown or whitish particles or boring dust, or shredded wood fiber, which the insects made while working in the bark or wood and which they push to the outside in order to clear their galleries.

The grubs in the bark and wood can be killed by thoroughly saturating all parts with liquid orthodichlorobenzene. As it is necessary for the solution to penetrate the wood and reach the insects in order to kill them, great care must be taken to apply the liquid thoroughly. This solution is colorless and will not stain. It has a slight odor which disappears after a short while. Orthodichlorobenzene can be effectively applied either with a brush or a forceful sprayer. The spraying method is preferred since it saves much time and labor. One pint will treat a chair; three gallons is sufficient to treat one hundred square feet of log surface.

The injury can be prevented by, when possible, delaying cutting of the trees for log cabins until fall when the insects are not active. Place the logs at once in open piles, either off the ground or under cover in such a manner as to offer the best facilities for the rapid and thorough drying of the inner bark. This will prevent attack by most insects. To insure the maximum amount of protection, however, the logs should be sprayed the following spring when the insects become active. This method is especially recommended where it is desirable to retain the bark on the wood.

When it is necessary to cut the trees during the spring or summer months, treat them as soon as cut with a solution of coal-tar creosote, grade one liquid oil, one part, to kerosene, three parts. Before use it should be strained through burlap. The creosote stains the wood very little when diluted in this way.

If the treatment of the bark with creosote is objectionable, and the bark can be readily peeled, remove the bark from the tree in strips, treat the wood with the creosote and kerosene mixture, and replace the bark, using large-headed nails. This will prevent insect attack and preserve the rustic appearance of the wood.

Where the bark is not especially desired, fell the trees at any time of the year, although preferably in the fall, remove the bark, and brush the logs with creosote. This will give them a pleasing stain. Wood used in the manufacture of rustic furniture should be cut during the fall and winter months and removed from the woods to a place of protection before insect activity begins in the spring.

Large carpenter bees sometimes damage the woodwork of buildings by boring large, circular holes in the wood and making a series of chambers within the wood in which to rear a brood of young. These bees are as large as bumble bees. The burrow is one-half inch in diameter and runs horizontally across the grain of the wood for a short distance and then turns downward to run with the grain for over a foot. Each chamber or cell in which a young bee is reared is separated from the adjoining chamber by a thin circular partition or septum of wood. The cells are filled with pollen for food.

Painted as well as unfinished wood is damaged. Adult bees which persist in boring can be killed by a "fly-swatter" and remedies are the same as for carpenter ants.

Included in the group of insects directly injuring man are the biting and sucking insects, such as stable flies, horse or gadflies, lice, fleas, bed-bugs and other sucking bugs. Some of these insects transmit such diseases as yellow fever, malaria, dengue fever and bubonic plague. Destruction of breeding places, or the larvae in their rearing places, thorough screening of houses, traps, cleanliness, extermination of vermin, such as rats and mice, and the use of fumigants, insecticides and repellants are methods of prevention and remedy. The field is entirely too broad and technical for comprehensive discussion except by experts.

Household animals, such as dogs and cats, are often responsible for infestation of man by fleas. Bed-bugs are frequently brought into houses in laundry or baggage or on visitors. Loosely or openly constructed houses are also responsible for infestation by these highly undesirable guests.

Full details on these insects and their control can be obtained from the Federal Bureau of Entomology, Washington, D. C.

House or typhoid flies, other flies, roaches and the like, may contaminate human food or drink and thus transmit such diseases as typhoid fever to man in his own home. Destruction of breeding places, thorough screening

of buildings, traps, and poisons and insecticides are recommended by the Bureau of Entomology.

Sodium fluoride and many standard insecticides are very effective against roaches. The roaches crawl through this poison and then in cleaning themselves take the poison in their mouths. Care should be taken in using sodium fluoride where children or animals roam about the house. Roaches sometimes migrate from one house to another and may even come with groceries.

The same wood-boring insects which destroy the woodwork of the house itself also injure stationary and movable furniture, and other material. In the case of upholstered furniture, other types of insects damage the upholstery and require special treatment.

Against clothes moths, preventives are the most practicable methods of protection of fabrics. Carpet beetles, larder beetles, silver fish, roaches, and house crickets can be eradicated from the house by means of fumigation, insecticides and poison baits; the experts of the Bureau of Entomology can give specific advice.

Loosely constructed buildings are often responsible for infestation by crickets. The European house cricket is a pest in buildings in eastern United States. Besides being noisy and eating fabrics, it spots walls and wallpaper. Silver fish or Lepismids are sometimes brought into houses in rolls of wallpaper that have been stored in infested buildings. They injure materials containing starch or glue in dark, damp places. Book lice or Psocids eat the starchy paste in book bindings, wallpaper and photos; most injury occurs in closed, warm damp rooms.

Other pests of books include termites, beetles, roaches and silver fish. Book bindings and covers are often treated with poisons or given heavy coats of varnish to prevent insect injury.

Within the group of special food pests are weevils, grain moths, flour moths, meal worms, grain and flour beetles, fruit flies and household ants. Meats, cheese and condiments have their special pests, even tobacco, cigars, cigarettes and red pepper. In the case of cereals most of the damage occurs in storehouses, but material in houses is often found to be infested. The field is too large to be more than briefly outlined. Proper preventive and remedial methods can be obtained from the Bureau of Entomology.

Household ants can be eradicated by placing honey poisoned with thallium in shallow dishes about the kitchen or pantry, provided children and animals can be kept away. Thallium is a slow working but effective poison and the ants carry the poisoned bait into the nest and feed it to the queens and brood, resulting in the gradual death of the entire colony.

It is hoped, then, that we will remember a few main points. These are,—proper construction of buildings, including insulation and avoiding loose or open connections; necessary preventive precautions, the simplest methods of discouraging insect guests; and the fact that experts in the Federal Bureau of Entomology have developed effective remedial measures for all types of household pests. Keep the home free from insects or they will make it unsafe or uninhabitable for the humans in it.

PUNG CHOW, CHIEF MASCOT

by Ethel I. Mason

WHEN Pung Chow heard the news that he was due to be placed on the retired list of the U. S. Navy, he was very much shocked. He had heard that his master was soon to retire from active service, but the information had gone in one ear and out the other so far as Pung was concerned. His duties of guarding the parade ground at Hampton Roads kept him fully occupied.

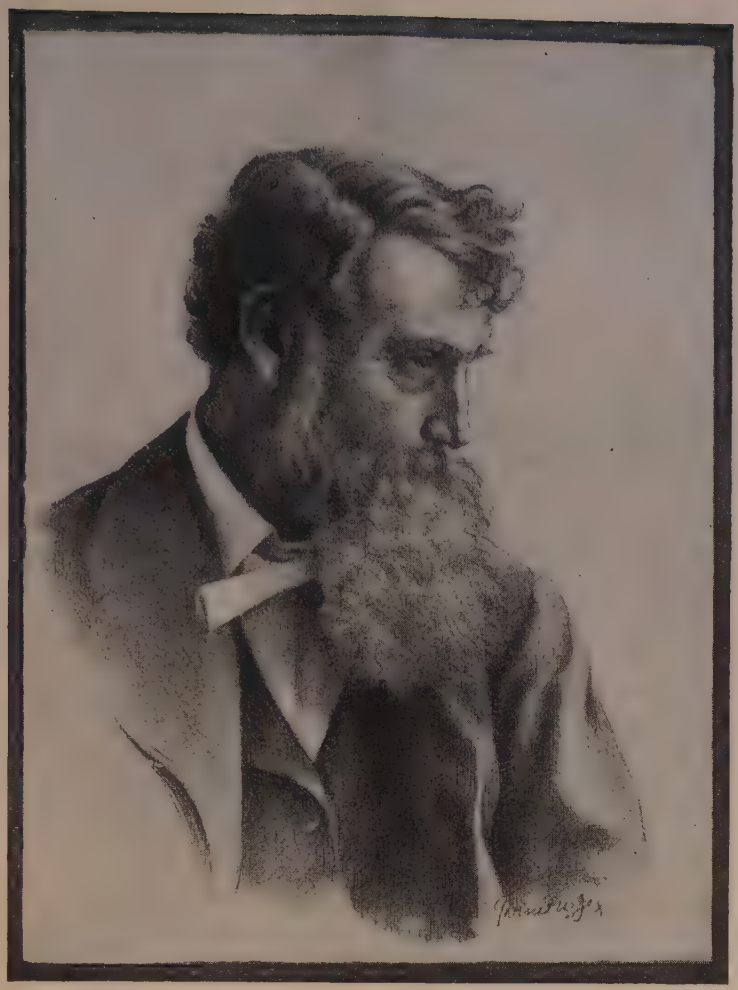
His record in the fleet has been an excellent one. Chief Mascot on the battleship "Colorado" on its cruises to many European ports, he has met no end of exciting adventures. His master, Rear Admiral Belknap, took him on strolls in Greece and Italy, France and England, so that Pung is quite justified in feeling that he is a much-traveled dog.

"IS EVERYTHING SHIPSHAPE"
Pung Chow looks over the ship with the critical eye of Chief Mascot

Moreover, he has met Queens and several Kings and not a few charming Princesses, who patted him graciously and complimented him on his good manners. Pung Chow, in fact, had the time of his life abroad, and was not specially pleased to learn that he was to have a tour of duty at a shore station in order to assist in the training of recruits at the Hampton Roads Base.

However, there was this much to be said about it, the dog of an Admiral ranks way up in the dog social scale and Pung never permitted himself to forget this fact. Moreover, he rather enjoyed the weekly parades when a thousand odd men drilled out on the open parade grounds where his master reviewed them as the bands marched by. Pung helped to "look them over," standing at strict attention, his nose directly in line with his master's shoes, as he had been taught.

Now Pung Chow is quite disconsolate. He is only four years old, and if anyone hears of a really good opening for a Chief Mascot on a battleship, or even a destroyer, he would like to receive the particulars. Rumor has it that he is thinking of going into aviation. The question that troubles him is, can aviator mascots eat all they want to? Or must they diet? For Pung has grown rather fond of the good things that naturally have come his way.



JOHN MUIR, 1838-1914
(After a photograph in "The National Cyclopedia of American Biography," Vol. IX.)

JOHN MUIR

by John Wright Buckham

Illustrated by Garnet Jex

JOHN MUIR was a guid Scotch American; but his home was, as he once wrote his address: "John Muir, Earth-planet, Universe." He first opened his eyes upon the earth which was to become to him so fair in Dunbar, Scotland, April 21, 1838. His father emigrated to Wisconsin as a homesteader in 1849 when John was but eleven years old. Here the boy learned the meaning of hard, grinding, incessant farm work, but also what he has called the "humanity" of animals and the beauty of Nature in the unspoiled woods and fields about his pioneer home. Here, too, he discovered for himself, in the wee sma' hours stolen from sleep in the early dawn, the consolation and delights of the best literature.

At an early age he set forth to find his own place and part in the world and studied for a short period at the University of Wisconsin. He intended at one time to be a physician; at another an inventor, in which line he had made some notable successes, including an automatic bed which threw the sleeper out at the set time, without fear or favor. But, as he said of himself, he was led of the Spirit into the wilderness, and took as his vocation the study and interpretation of Nature. In this pursuit he wandered alone wide and far. His only comrades in one of his long solitary tramps alone through the South in search of unfamiliar flowers and trees and animals were these three books: the New Testament, Milton's Paradise Lost and Burns' Poems. After exploring Florida and Cuba he came at length to the land of his soul's delight —California. For ten years he lived alone in the Sierra, studying with the utmost care,—taking copious notes the while,—the flora and fauna and geology of this great "range of light" as he loved to call it.

The impression of vitality, enthusiasm and friendliness which I received from a precious conversation of an hour I once had with Muir in his home in Martinez is with me as an inspiring memory. He talked of the formation of Yosemite Valley and how he had clambered about the cliffs studying the marks of the glaciers that "stuck their noses together" and plowed out the great valley and of the glory of that vast temple. I caught the glow of his imagination and of his tender affection for "all things both great and small." When I left him he accompanied me to the garden. I asked him, as I was taking leave, about a bird whose odd song I had heard from the bushes along the little stream on the way from the station. Instantly he broke into the most vivacious and life-like imitation of the song, and informed me that it was the yellow-breasted chat. It was not only an imitation but a revelation of that sensitiveness and fellow-feeling for living creatures whose language most of us fail to catch.

He has somewhere translated the carol of a robin heard in a distant mountain meadow of the High Sierra as saying: "Fear not, for only love is here!" Whether he is describing the graceful movements of a water-ouzel, or the eccentricities of a Douglas squirrel, or the silent

life of a giant sequoia, or the clumsy shuffling of a brown bear, or the rhythmic dance of an insect in the sunshine, or the response of the forest to the summer shower, there is a Bergsonian intuition in it all which makes our kinship to Nature vivid and real. Doubtless he reads human thought and feeling into Nature; but is not this the way to win her richest meaning?

John Muir achieved a distinct and notable place as a Nature interpreter. His approach to Nature was quite unlike the Yankee Nature-wisdom of the hermit of Walden, the affluent Nature-philosophy of the sage of Concord, or the observant sagacity of the seer of Slabsides. As contrasted with these contained and sober Nature seers, Muir is the ardent, passionate devotee, living alone among the heights in the great forests and amid the snows, all for pure love of Nature in her wildest and least pastoral moods. He is, above all others, the Nature *mystic*,—a Scotch mystic, canny, energetic, wiry, observant, yet a mystic of the mystics, nevertheless. Gazing upon a tree he loses himself, like Brother Lawrence, in its universal prophetic message; looking into a sunset he is rapt away into the eternities; peering into the corolla of a flower he is absorbed in pure and deathless beauty. He is enthralled by Nature. For her he leaves human associations—not because he loves them less but Nature more—and fares forth into the pathless wilderness.

Here is no "fop-o'-fields or sycophant of civilization." He does not care how distant is the nearest grocery, telephone or hospital. He is at home wherever the sun shines or star-beams glitter, storms sing or snowflakes fall. And yet he is no hermit, but one of the most companionable of men, his conversation flowing like a mountain stream and his heart as warm as the campfire beside which he loves to sit and talk and listen in the glow of its flame of fellowship. He can even enjoy a dinner with his friends about a table; and yet as he writes: "A crust by a brookside out on the mountains with God is more than all."

He penetrates alone into the remotest fastnesses of the Sierra and is everywhere at home, brother of birds and beasts and insects, lover of the rocks, friend of trees and flowers, studying all with loving diligence and watching the drama of the sky and the changes of the seasons with unwearied delight. He dashes up the mountains, he clings to the sides of cliffs and cañons, hanging unafraid above yawning depths; he stands in the spray of waterfalls, rushes out at night, unterrified, to watch the titanic work of the earthquake. He glories in the storms, fares forth at midnight to see what Nature does in the silent hours, chases sunsets to reach some vantage point before they fade, falls upon his knees to scrutinize the "embroidery" of mouse tracks, creeps into the crevasses of glaciers, climbs trees to feel them rock in the wind, tunnels under snow-banks, traces rivers to their fountains and trees to their seeds, and flowers to their haunts, and all things to their Original Source.

He is so absorbed that he forgets to eat and banishes sleep that he may watch the stars through the branches of the giant sequoias; he endures withering heat that he may understand the desert and the fiercest cold that he may know the secrets of the snow. He dances at night on the top of Mount Whitney to keep from freezing, and goes for days without food, with "no ill effects." Nature can neither frighten nor freeze nor drown nor burn him. He bears a charmed life. He becomes all things to all forms of Nature if by any means he may win some and bring them within the admiring love of his short-sighted fellow-men. This comradeship with Nature was for him no holiday pastime, nor outburst of the heydey of life, nor selfish amusement, but a lifelong mission. He lived, as he put it, "only to entice people to look at Nature's loveliness."

All this appears in his books, and is the secret of their abounding vitality and charm, but it comes out very richly in the admirable biography written by my colleague and friend, and Muir's friend, Dr. Badé, and especially in his letters, with a spontaneity, an intensity and an untrammelled yet artistic freedom which proves that his writings were all as genuine as they are fascinating.

From each Nature interpreter we may take the especial message that Nature, or God through Nature, has given to him. From John Muir it is a message of *optimism*. He is Nature's Robert Browning—original, buoyant, and invincible—"one who marched breast forward," not only "never doubting clouds would break" but finding clouds, in their way, as beneficent and beautiful as sunshine. Muir died December 24, 1914, but the spread of his influence has but just begun.

"Come on," he calls to us, waving a beckoning hand as he sets out for still loftier heights in the Range of Light, "Look up and down and round about you!" And we follow—"briskly venturing and roaming," in this exhilarating companionship, "washing off sins and cobweb cares of the devil's spinning in all-day storms on mountains; sauntering in rosiny pinewoods or in gentian meadows, brushing through chaparral, bending down and parting sweet, flowery sprays; tracing rivers to their sources, getting in touch with the nerves of Mother Earth; jumping from rock to rock, feeling the life of them, learning the songs of them, panting in whole-souled exercise, and rejoicing in deep, long-drawn breaths of pure wildness."

Among other good things, Christmas will bring Nature Magazine to many. It is an ideal gift that lasts the year around. The December issue will be a sample of that year-round pleasure. Besides a cover that is beautiful and worthy of framing and twelve attractive paintings in color by Mr. Horsfall, there will be a beautiful frontispiece in colors. Tom Gill contributes a "different" Christmas tree story; Hugh Stevens Bell an article on Carlsbad, the Magnificent; Frank DuFresne a fine dog story, to mention only a few of the features. In January the Association's Expedition story begins.

THIS poignant story of what happens when the forest is stripped from the land and no longer able to do its duty as the father of fertility is written and illustrated by C. G. Riley of Yale University School of Forestry. It was awarded first place by the faculty in the annual contest for 1927 for the Charles Lathrop Pack Foundation Prize. This prize, like several others established in other forestry schools, is for the best popularly written article on forestry or a phase of the forestry problem.

A TRAGEDY of the BACKWOODS

by C. G. Riley

THIS is a true story. It is a story of a man and a woman—thousands of men and women—who have sacrificed, and are still sacrificing lifetimes of labor—honest, faithful labor—for what? It is a story of a forest—of innumerable forests, that have been. It is a story of inestimable wealth, and of tragic waste and poverty. And lastly, but greatest of all, it is a story of rescue and salvage, and the dawning of a new era of progress and happiness.

The scene of the story is a portion of Ontario lying within the granite-bound region known as the great Laurentian shield. Here lies a fairyland of pine-margined lakes and rivers and hills—a land of bright skies and golden sunsets—a veritable paradise to which city-worn throngs flock each Summer, to spend a few glorious, health-giving weeks in the sunshine.

A paradise—and yet a prison. A prison behind whose invisible bars are held thousands of honest, hard-working men and women—and little children; prisoners who have committed no crime, who have never been granted the justice of a trial or the opportunity of defending their rights for freedom, and who have helplessly and unknowingly been forced to give lifetimes of toil to the strengthening of the very bars which hold them.

And there are numberless such prisons, such paradises, scattered here and there throughout the domains of our two great sister nations; and there are legions of honest, toil-worn prisoners, serving with their life's labor the sentence imposed by short-sighted, inefficient administration.

In a pretty valley in this prison-paradise, lies a little farm. The group of summer visitors, exploring the oft-explored environs of their holiday resort, come upon it suddenly, where the road turns sharply around the end of a rocky ridge. Invariably they stop and exclaim at the simple beauty of the scene. Before them snuggles the little wood-encircled clearing, its two or three fields separated by fences of rails or piled stones. Near the white, sandy road are the farm buildings: a log house and barn, with the usual smaller buildings about them. In front of the house, stands a row of three large balsam trees; and along the fences surrounding the buildings, are other trees, some of them dead and naked. Past the barn and down through the old stony pasture field, meanders a trampled, marshy stream bed, in which the summer drought has left only a trickle of water which slowly finds its way into a marsh-bounded pond, where dragonflies dart here and there above huge, white water-lilies.

The visitors pause for a few enraptured minutes; a camera is produced, and a picture snapped. Then they pass on down the road into the valley. They have not noticed that in the shade of the great maples along the pasture fence, no cattle are standing, waiting for the mid-day heat to pass. Neither have they noticed that the doors of the log buildings hang open and askew, or that the fences are tumbled-down and worthless. To them, the dead and broken trees around the buildings, and the fields beautifully sparkling with daisies and buttercups, have told no tale. But in a few minutes they come again in sight of the farm yard, and for the first time, realize that it is vacant—deserted. In front of the old log house are the remnants of a flower garden to which they are attracted by a few large peony blossoms. They enter past the old picket gate that hangs by one rusted hinge, and gather the peonies. They wander around the house through the tangle of coarse grass and weeds that have grown over the paths, and peer curiously in through the paneless windows. Then they return to the road past the gray old gate, and saunter on their way.

What they have seen, is a picturesque old farm, shimmering in the noon-day heat of a pretty, woods-bounded valley. They have found the buildings deserted and falling into ruin; and they have passed on. What they have not seen, is the story that is

A RELIC OF PRIMEVAL FOREST

These blackened trunks, left for some imperfection, remind one of the past

MONUMENT TO A LOST HOPE

Farm building hewn with the axe and left when the land has failed

written so plainly on every foot of that old homestead. It is carved in the hewn walls of the sagging buildings. It is imprinted in the weed-grown fields, which still show the remains of plowed furrows. It is built into the piled stone fences, and is voiced by the rusty hinge that holds up one corner of the gray old gate.

The story began when a young man, full of hope and vision, entered this little valley and set about the simple but arduous task of building a home and a livelihood for himself and his little family. There were no prison bars then; they came later. Then there were only the forest, and the sloping valley floor with the little brook and the pond. Near by were other valleys, where other farms were being built; and a few miles away, where a large river emptied into the lake, was a flourishing little town, the offspring of two large, competitive sawmills.

BLACKENED STUMPS REMAIN

These must be cleared to free the land for tilling—but not for long

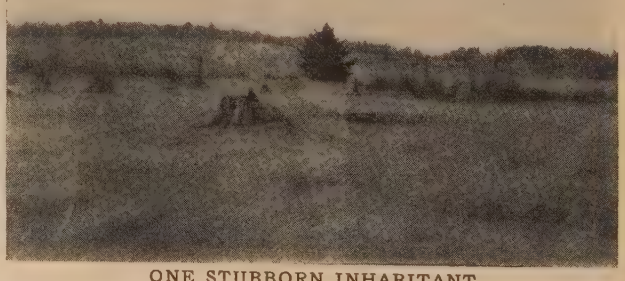
The little valley, therefore, presented bright prospects. Here the young man would build his home, clear a few acres of land each year, and grow such produce as his family could themselves use, or could be traded in the town for other necessities. The trees of the forest were principally pines—great towering white pines, whose stumps measured two, three, and four feet across the top. During the coming winter, these would be removed by one of the lumber companies; and the following spring, the work of home building and clearing land could be started. There would be plenty of material left—the smaller trees which the lumber company would not take out—with which to build house and barn.

Ten years have passed. During ten long winters, the young man, now advancing toward middle life, has toiled cheerfully and successfully in the forest. He has taken his team and sleigh to the "camps" and hauled sawlogs for one or the other of the two lumber companies. Each time, he has returned to his little home and family with his carefully saved earnings in his pocket—earnings that would buy shoes for seven pairs of growing feet, and food to satisfy seven clamorous appetites. He has hauled many loads of logs from his own land, and dumped them on the ice of the river; and each load has assured more food and warm clothing for his young family. Many loads of fuel wood have been hauled to town, and each has added a few transient dollars to his earnings. Each spring for ten years he has taken his team to the fallow, and laboriously hauled and piled fallen tree trunks to be burned. He has dug and pulled innumerable stumps and added them to the piles. Every spring for ten years he has enlarged his little farm by a few acres of newly cleared land—cleared of all but the stumps of the pine trees. Ten times he has harvested his few loads of hay and oats, his potatoes and garden produce.

He has been successful; but he has met with disappointments. The soil, which ten years ago looked so dark and rich beneath its carpet of pine needles, has undergone a change. As he plods along behind his harrows, our farmer watches the sand trickle back into the little furrows; and sometimes he is half enveloped in a cloud of yellow dust that drifts away on the wind. During those ten years, he has built fences, and many of them are built of stones that have been turned out of the ground by the plow, and have been gathered and hauled off the fields. Ten years ago they were hidden from sight by the thick layer of pine leaves and forest litter. Land that when new and loamy had produced hay breast high, now yields but little better than half of its original crop.

And through those ten years he has not worked alone. Through success and hardship, hope and disappointment, a brave little woman has been always at his side. Hers has been a life almost unknown to the modern housewife. She is the mother of seven young children, a typical pioneer family. Her hands are hard and roughened by the variety of her tasks; and at the end of each day, her face bears an expression of uncomplaining weariness. But true to tradition, she is ever cheerful and full of hope.

That was sixty years ago; and in that sixty years, many changes have taken place. The seven sons and daughters have drifted far apart, and the youngest are approaching their declining years. The old homestead



ONE STUBBORN INHABITANT

The white pine stumps defy the farmer and remain to watch the passing tragedy

is now but a piece of rustic landscape and a relic, where summer visitors wander on their tours of exploration, little realizing the significance of that monument to futile, wasted labor, that took a lifetime, two lifetimes to build.

But the hands of time have wrought a change over more than the old homestead in the valley. Other farms in adjacent valleys are in a similar state; while still others, even more pitiful to behold, are yet the homes of families. Their stony fields are still dotted with the great, charred stumps of the primeval giants, whose resinous roots, many feet below the surface of the sandy soil, are just as sound and immovable as when the stately trunks which they once bore were crashed to the ground among them. And these fields are now incapable of providing a decent living to the struggling farmers and their families. They are the prison bars from which these prisoners cannot escape. These are the children of the men who did not, or could not heed the warning of the sandy, stony phantom of standard barren failure.

LAND UNFIT FOR FARMING

No farmer should be allowed to settle this for the forest should claim it

ONCE A CULTIVATED FIELD

Shorn of the forest that secured it, the field is left to stones and weeds

These people, unlike their pioneer fathers, have not the wealth of the forest to draw upon for their "cash" crop. They have no sawlogs to cut and sell. The lumber camps, which in the early days provided an ever available source of income, have vanished with the timber. The two saw mills in the little town are now but derelicts, standing silently among their sawdust and slabs; and the town itself is but a memory of the prosperous activity of half a century ago.

But now, at last, a change is about to take place. The prison bars which have been growing in strength for seventy years, are to be broken; the prisoners are to be liberated. The time has arrived when a progressive race will no longer tolerate such a condition. They demand that something be done, and Ontario's legislative assembly has heard them. The result is an act which provides that not only will the provincial government make an offer of purchase for these depleted lands, but the present owners will also be given assistance in migrating, and reestablishing themselves on free homesteads in a land of rich agricultural soil. There they may grow crops equal to the world's best; there they may build homes worthy of their labor, and there their children can receive the education that is their birthright.

The lands which are to be abandoned by their present owners,—lands on which no farmer should ever have been allowed to settle—are to be taken back into the public domain—returned forever to the status of national forests, to be planted and tended, and made to yield the only kind of crop of which they are capable.

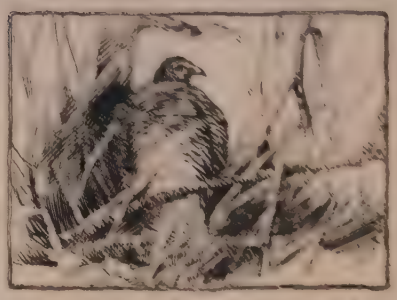
And the remnants of the primeval forest—the charred and weather-beaten old stumps that still dot the barren fields—are to witness the final scene of that colossal tragedy through which they passed. Soon they will be lost to view, hidden by the crowns of a new forest. The white stones will be covered once more, slowly but surely, with a carpet of brown needles. The sterile sand will again take on the rich, loamy aspect that the first settlers found. Instead of sunscorched fields, dotted with stones and blackened stumps, and traversed by tumbled-down fences, visitors will see a valley of green,—green with the whispering tops of the young forest, telling with thin soft voices of the hope that their coming has made possible.

Nursery Nature Tales

Being the Adventures of Toby and Beth,
Two Very Little People in the Big World

Fine Feathers

by Elizabeth K. Peeples



"TOMORROW'S Thanksgiving! What are you thankful for, Toby?" inquired fat little Beth.

"Turkey! Just come look!" promptly answered Toby, leading the way to the window from which a great bronze gobbler and smaller bronze hen could be seen out in the yard. As they stood watching, the gobbler spread his tail like a round fan, lowered his wing feathers until they scraped the ground, threw back his head against the glittering ruff of feathers about his neck, and strutted slowly before the hen.

"Gobble, gobble, gobble!" he said.

The sun shone upon his feathers, and on the red decorations of his head.

"Why does he do that?" asked Beth.

"To show the hen how beautiful he is," Mother answered. "Father birds generally wear more beautiful feathers than mother birds, and they generally seem proud of them too."

"Did the father robin?" queried Beth.

Toby thought for a moment. "Well, he had a redder breast," he said. Then his brown eyes sparkled, "Oh Beth, don't you remember how much fancier the father chicken is than the hen?"

"He has a longer tail," admitted Beth.

"And a larger redder comb, and brighter feathers!" exclaimed Toby.

"Think of the cardinals that come to the porch for crumbs each morning," reminded Mother.

"Oh, yes, Mr. Cardinal is much redder than his wife," said Toby.

"Then why doesn't daddy have a red suit?" asked Beth.

That was a puzzler. Toby rubbed his curly head.

"Well, that's funny," he said at last. "Daddy's clothes are all black, and brown and dark blue, and Mother, you are the one who has a red dress! Why?"

"Yes, why don't the mother birds have the pretty clothes?" demanded Beth.

"Well, dears, you'll soon see, if only you ask yourselves a few questions," answered Mother. "What is the most important thing the mother hen, or cardinal, or turkey ever has to do?"

Beth thought making a nest, but Toby was sure it was laying eggs and hatching them into young birds, and when he said so Beth agreed with him.

"Now you remember that the hen's nest was on the ground," said Mother. "So is the turkey's. Enemies can reach them easily. Even nests in trees are within reach of many creatures."

"Cats and snakes," suggested Toby.

"Br'er Fox likes to eat chickens. My Uncle Remus book says so," added Beth.

"Then can you tell why mother birds don't wear bright feathers?" asked Mother.

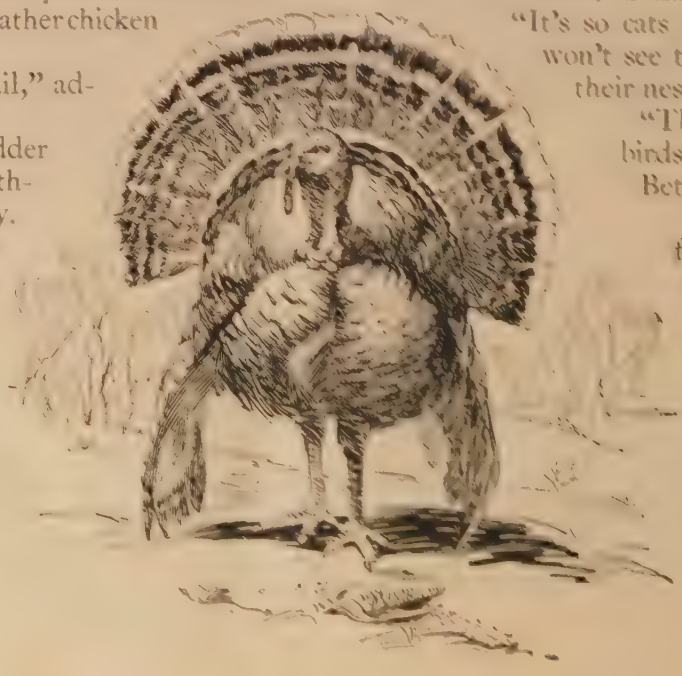
"I know! I know!" shouted Toby. "It's so cats and foxes and hawks won't see them when they're on their nests."

"That keeps the little birds safe too," commented Beth thoughtfully.

"But why are the father birds so fancy?" persisted Toby. He was watching the turkeys again.

"To be beautiful in the eyes of the mother birds," explained mother.

Beth seemed a bit troubled. "I think my Daddy is beautiful in his brown suit," she said.



THE AMERICAN LOTUS IN PROFUSION

Around the great golden blossoms, giant leaves and curious seed pods, clusters a wealth of Indian lore

Flowers With a History

by Hazel Hankinson

A poet once wrote, "Oh, gorgeous tales in the days of old, were linked with opening flowers". That poet was harking back to the time of Shakespeare and Sir Thomas Moore, to the days of knights and ladies; to the time when fairies were believed to ride abroad at midnight and romp with human folk. True it is that much delightful plant lore has come down to us from Asia, Europe, and the British Isles. But here in America, also, from the time of the Redmen, free fancy has woven itself about many a native flower and tree and shrub. Ever since the first colonists discovered growing things which they had never seen before, there has been building up around American plants a background of legend and romance.

Over the prairie lands of the Middle West and West in the days of the pioneers, a little plant with blossoms like baby sunflowers rose from the earth in many a lonely spot. Not its flowers, however, but its leaves have won for this plant a place in picturesque classic story. The compass plant with its leaves turning their edges north and south can be found today on the prairie lands. It was Longfellow who many years ago immortalized the charm of it in his poem "Evangeline". Exquisitely the poet describes this interesting flower, writing:

> Look at this vigorous plant that lifts its head from the meadow,
> See how its leaves are turned to the north as true as a magnet;
> This is the compass-flower that the finger of God has planted
> Here in the houseless wild, to direct the traveler's journey
> Over the sea-like, pathless, limitless waste of the desert.

Further south, the maypop, running riot over fields of cotton, has earned the right to be called the Passion Flower. It came about through the efforts of early missionaries to bring a new religion to the natives. Difficult it was for them to fix their teachings upon the minds of that strange untutored race. They must resort to whatever they found around them to make the lesson clear. And in the use of this wonderful flower they discovered a method quite unique.

In the three prominent styles at the center of each blossom fancy saw the nails that were used on the Cross. The stamens with anthers attached were the hammers by means of which the nails were driven. The ray-like parts which make up the corona suggested the crown of thorns.

The flower-leaves, ten in number, were pointed out as the disciples, with Judas and Peter absent because they were disloyal to their Master. The true leaves of the plant were the hands of the enemy; and the curling tendrils were their cruel whips.

Such fancy about the flowers was probably more easily impressed upon the minds of the Indians because they themselves had highly imaginative ideas about the origin of many plants. Among the northern red folk, for instance, there runs a legend about an unusually brilliant star once seen by a certain tribe. Calling a council, they selected two of their handsomest youths to go forth and persuade the star to come down and dwell among them. The young men obeyed, and the star consented to alight upon a tall cliff at the side of the camp. The red folk were not satisfied, however, and begged her to come nearer. The next evening, therefore, the star alighted in a tree-top above their wigwams. But again she was beseeched to come down to earth, and this time she promised to live on the lake among their graceful canoes. The following morning, the story concludes, the red folk looked out upon a beautiful sight. Riding on the placid surface of the lake was the star in all its dazzling whiteness. The water lily had been born!

The American lotus is another water plant around whose great golden blossoms, nest-like seed pods, and tuberous roots, clusters a wealth of Indian lore. In this it is as rich as is the Egyptian lotus in its background of Biblical history. When Columbus arrived, the Nelumbo, or water chinquapin, was being cultivated by

THE PASSION FLOWER

Missionaries used its interesting formation to teach religious parables

THE CALIFORNIA POPPY

When the Spaniards saw it blooming they called the country "The Land of Fire"

the red men along the Tennessee and Cumberland rivers and also along the Mississippi. The tubers, with their sweet potato flavor, were cooked for food, and the seeds were relished raw as nuts. The seed pods, when the hard round balls within them were dried and held there loosely, often served as rattles in the wigwam world. And the beauty of the gorgeous blossom became the basis for legends as fascinating as that of the water lily.

Not only in Indian superstition, but in colonial history as well, is found the lowly Jimson weed. The Cherokees, whose native habitat was the southeastern United States, still have a reverence for this homely plant. It is believed that the weed has some hidden power of improving the memory and of building strength of character. When a child is born, therefore, the weed is beaten up and some of it put into a bowl of water taken from any waterfall that has a murmuring sound. On four successive days the child must drink of this that he may have good memory and be quick to learn.

Jimson weed is short for "Jamestown weed." It is so called because in colonial times some of the soldiers at Jamestown, Virginia, ate sprouts of it and became delirious. This American plant was new to them, and they did not know its strong narcotic effect. It is long since that time, of course, that its value to drugs and medicine has become so widely known.

Flowers of the West coast, as well as those of the East and Middle West and South, are touched with the spirit of romance. Never before had the California poppy been seen until Spanish explorers sailing near

that shore glimpsed a hillside which seemed to them as golden as the sun. Immediately the coast was named "The Land of Fire", and no other state can be said to have chosen her state flower more fittingly.

Of the trees, none belongs to American history lore more thoroughly than the Kentucky coffee tree. Adventurous settlers from the Eastern coast, among the first to come into Kentucky and its neighboring states, had no luxuries; bare necessities were all that could be produced. Beverages, especially, like tea and coffee, were lacking. Then someone discovered that a drink somewhat like coffee could be brewed from the seeds of a tree which was new to them. Henceforth, the tree was called "Kentucky coffee tree", and many a tale of hardships and longing for comforts of the old home are wrapped within that name.

Shagbark hickory is another tree of romance which is staunchly American-born. Centuries before white men came to this country, it was a source of joy to the Indians. And in later times it often helped the colonists to fill a lean larder. In Autumn, the nuts were gathered. According to the fashion of the red folk, they were then placed in water and pounded, shells and all, until a milky liquid was formed. This became a drink called pow-co-hicora. And from that drink has come the name the "hickory" tree. With meat added to pow-co-hicora a broth was made; while with a measure of meal poured in to give the liquid body, corn cakes fit for a chief, or a princess, or for just a mere man, could be baked.

The holly and mistletoe of this country are both native plants, but the stories gathered about them belong strictly to the holiday berries of the Old World. America has, however, a holiday plant of her own. The poinsettia of semi-tropical soil has within later years become almost as much a part of this country's Yule-tide decorations as the plants of older use. So new it is that as yet traditions have not arisen. But who can say that in centuries to come graceful myths and tales will not have twined themselves around the poinsettia's crimson leaves to add charm to this nation's choice plant lore?

A Nature Puzzle

By Florence H. Moore

I WAS on my way south to spend the Winter, when some one who likes to kill live things just for "sport," took a shot at me and wounded me, so I was unable to go on with my pals. I barely escaped last Spring too, when I was on my way to my favorite breeding place up near the Arctic Circle. You'd think, wouldn't you, that all the states would pass laws prohibiting "Spring shooting," or at any time during the breeding season, as thousands of us are killed at this time and our babies die of starvation and we may soon be as scarce as buffalo or the great auk, if something isn't done about it?

It's the same going or coming. Every time we stop for food or water, the guns begin to roar all around what we thought was some more of us, but they're only wooden ones, put there to decoy us. We can't always see who is shooting at us, until the bullets begin to fly from the thickets.

The letters of my two names are also in the picture, but where they repeat, only one is given. "A," "L" and "D" repeat, leaving eight in all. Write them down as you find them, then assemble in order.

TO USE HOLD OVER THE HEAD WITH TOP TOWARD NORTH
The chart is for Nov. 1, 9 p. m.; Nov. 15, 8 p. m.; Nov. 30, 7 p. m.

AQUARIUS *and November Skies*

by Isabel M. Lewis

AQUARIUS is the twelfth and last of the constellations of the zodiac, that broad belt of the heavens lying along the ecliptic in which are always to be found the sun, moon and planets.

Ganymede, most beautiful of mortal youths, so the story goes, was seized by the bird of Jove and carried away to Mt. Olympus to become the cup-bearer of the gods. With this youth was identified Aquarius, The Water-Bearer. From his overflowing urn poured forth a never-failing stream of water marked by a line of small stars extending toward the east and south toward the constellation of Piscis Australis, The Southern Fish, with its beautiful Fomalhaut. Some even said that the ceaseless flow of water from this urn, which never needed to be replenished, fed the great sky-river, Eridanus.

The little Y-shaped group of stars that marks the inverted bowl where it is held by the hand of Aquarius is the most conspicuous configuration in this large constellation. None of the stars in Aquarius are brighter than the third magnitude but one should have no trouble in tracing its outline from its position to the north and west of Fomalhaut, which is the only first magnitude star in this region, and between Pegasus and Capricornus, southwest of The Great Square. At this time of year it lies due south and west of south in the early evening.

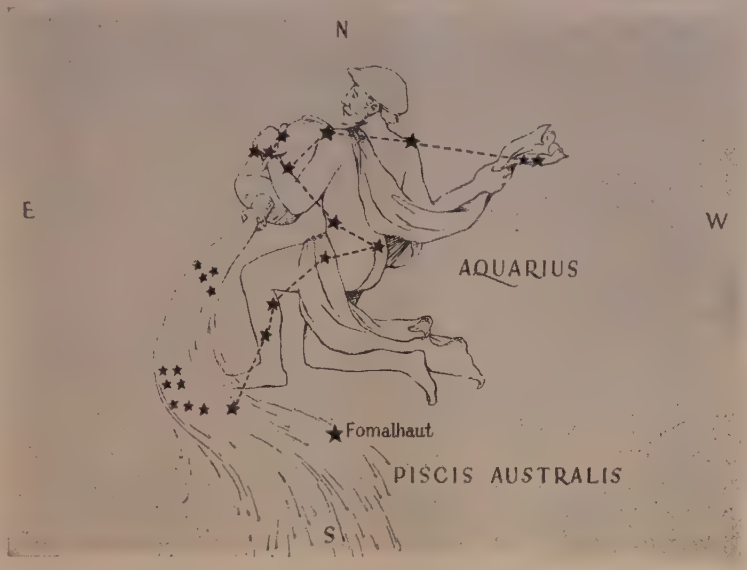
The planet Jupiter now lies directly east of Aquarius in the extreme western part of the constellation of Pisces. The stream of water flowing from the inverted urn of Aquarius lies between Jupiter and Fomalhaut.

That portion of the southern heavens which extends from Delphinus, The Dolphin, and Capricornus, The Sea-Goat, near the western horizon, to Cetus, The Whale, in the southeast, was known to the Chaldeans as "the sea". It is possible that the watery nature of the constellations in this part of the heavens originated in the fact that the sun passed through this region in the rainy season. In addition to the Dolphin and the Sea-Goat we find in this sea of the Chaldeans the Southern Fish, the Water-Bearer, The Fishes, or Pisces,

and Cetus, The Whale, a decidedly aquatic group. On the whole there is very little of interest here for the star-gazer. There are only two bright stars, Fomalhaut of the first magnitude and Diphda of the second, to relieve the barrenness of this region, though the planet Jupiter happens to be here just now in all its splendor, by far the most brilliant stellar object in the November evening sky this year.

In November the Great Square in Pegasus and Andromeda, next to it on the east, occupy a conspicuous position high overhead south and east of the zenith.

Across the northern heavens from Auriga and Perseus in the northeast, through Cassiopeia and Cepheus, now due north, into Cygnus and Aquila in the northwest extends the Milky Way, the backbone of our stellar universe, as it has been called, with the light of its myriads of faint, distant stars blended in a soft, luminous glow so clearly visible on dark nights.



OUR CONSTELLATION FOR NOVEMBER

Taurus, with its far-famed Pleiades and Hyades, is now coming into view in the east, and glorious Capella, with its soft golden radiance, attended by The Kids, now appears conspicuously in the northeast as Vega in Lyra swings far over into the northwestern sky. Only for short periods in fall and spring may these two magnificent first magnitude stars be seen above the horizon in our northern latitudes at the same time. One soon disappears in the west as the other appears in the east.

Now is a most unfavorable time of year to look for the Big Dipper in the evening sky as it rests almost upon the northern horizon below the pole and is frequently hidden completely from view by some obstruction such as trees or hills near the horizon line.

Jupiter, in Pisces, is the only planet visible in the evening sky this month. Venus is now a magnificent Morning Star. Its distance west of the sun will continue to increase until November 21 when it will reach its greatest distance west of the sun and will be visible for more than three and one-half hours before sunrise. After that date it will gradually draw in toward the sun once more. Although Saturn is still in the western sky in Scorpio it is now too close to the sun to be seen except possibly for a few days early in the month. Mars has now passed to the morning sky but is still too near the sun and too faint to be seen.

An unusual astronomical event will take place on November 10 when the planet Mercury will "transit" the sun, that is, pass so directly between earth and sun that it will be seen as a small black dot on the face of the sun as it passes from east to west of it. Unfortunately as the sun is not above the horizon in the United States at the time of the transit the phenomenon will not be visible here but it will be seen wholly or in part in the Pacific Ocean, Australia, Asia, Africa, Europe, the Atlantic Ocean and the extreme eastern part of South America.

So small is Mercury that at the time that it is crossing the face of the sun it will be impossible to see it without the aid of a telescope. It is comparable in size only to the smallest sunspots.

Ordinarily Mercury passes above or below the sun as it passes from east to west of it, which happens every 116 days, but when the planet happens to be near the point where its orbit crosses that of the earth at the same time that it is passing between earth and sun it is so directly in line with the two bodies that it may actually be seen against the face of the sun. This happens only rarely, however, and always in the months of May or November. The last transit of Mercury across the face of the sun occurred May 7, 1924 and the next will be on May 10, 1937.

All who are interested in meteors should be on the lookout for the two periodic showers that appear in November every year, the Leonids and the Andromedes. The former, which are swiftly darting and a vivid bluish-green in color, appear in greatest numbers about November 14-15 and will be seen in the early morning hours coming from the direction of the Sickle in Leo. The Andromedes, which are comparatively slow-moving and reddish may be seen in the evening hours from November 20 to 30 coming from the direction of the constellation of Andromeda.

It is through the expression of opinion by readers that editors are guided in their work. The editors of Nature Magazine will appreciate opinions from readers. Let them know what you like and what you do not like; what sort of articles you would like more of; what stories have been most interesting in recent issues. The editors value your views so please let them have the benefit of them.

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Have You Your Forestry Primer?

THE teachers of today have in their hands the public opinion of tomorrow. It is theirs to shape and to direct,—a great responsibility of far-reaching importance.

There are many problems that confront this or any other nation and one of the most fundamentally important issues before the people of the United States is now and will continue to be the Forestry Problem. Education of the mass of public opinion to the outstanding character of this question is important,—today and for the future. As a contribution to this end the American Tree Association, collateral forestry and tree-planting organization of the American Nature Association, published and distributed *The Forestry Primer.* One million and one-half copies of the booklet have been distributed to all corners of our country free of charge. It has brought enthusiastic response from educators everywhere. It has and does enjoy wide use. Have you your copy?

THE contents, aim and use of The Forestry Primer are described in the accompanying article. You can obtain your copy of this valuable little book by sending your request to: Forestry Primer Department, Nature Magazine, 1214 Sixteenth Street, N. W., Washington, D. C. It will be a valuable help during the current school year.

The Forestry Primer is a fundamental document. It comprises fourteen lessons, simply, briefly and effectively presented. The booklet opens with a foreword by Charles Lathrop Pack, president of the American Tree Association. In it he says that "this Forestry Primer aims to direct the public opinion of tomorrow to the great importance of that cornerstone of our country's economic safety—forests."

The first lesson in the *Primer* is devoted to Our Original and Present Forests, proceeding to the story of Where Have Our Forests Gone? Consideration is next given to What is Happening to Our Forests, their use and growth, losses by forest fires, by insects and disease, by waste. Lessons eight to eleven consider the means of assistance that can be found in reforestation, private and community forests, a forest policy, proper adjustment of taxation and in organization and educational activity. The last three lessons sum up what remains to us of our forest wealth, what has thus far been accomplished and what the future seems to hold.

This briefly describes *The Forestry Primer.* When consulted about it prior to publication, Dr. John J. Tigert, United States Commissioner of Education, warmly endorsed it. In a statement for use in the booklet he says:

"There is no more important lesson for the American people to learn than the need of growing and conserving forests and trees. Our future development as a nation will largely hinge upon the success with which we can spread this gospel."

Thus, to the number of one million and one-half, *The Forestry Primer,* has been spreading this gospel. It is not sold but contributed to the cause of education. An adequate printing has been made to care for the continuous demand for the booklet. A request will bring a copy to any member of the American Nature Association and reader of Nature Magazine. Schools may have a number of copies free by writing and describing their needs.

Teachers who have used them and desire more will confer a favor by telling how the *Primers* were used and the service they gave in the cause of forestry education.

Many ingenious and effective ways of using *The Forestry Primer* have been employed by teachers. It has been used for reading to the classes, as the basis of compositions, in drawing through use of the cartoon illustrations as subjects and in project work generally. Frequently the women's clubs have cooperated by offering prizes for the best essays based on the book.

One of the most interesting instances of its distribution was in California. The *Primer* was considered so valuable by United States District Forester Show and Regional Boy Scout Executive Charles N. Miller that a copy was given to every Boy Scout in the State when he reached the Merit Badge class. Mr. Show declares that *The Forestry Primer* "is now looked upon as one of the best available publications for elementary forestry education."

State Boards of Education generally have enthusiastically endorsed the *Primer* and it has been distributed with their special imprint in several states. In Pennsylvania the book is being widely used in connection with the educational campaign in support of the special bond issue for forestry to be voted upon by the people in 1928.

Stoat

AT PLAY

by George Miksch Sutton

THE wooden box contained two weasels,—one battered, bloody carcass; the other alive, trembling with anger and alarm, bright-eyed, and marvellously quick. We called the survivor "Stoat", and when we caught her with a gloved hand she squeaked sharply and bit savagely. With her lithe muscles tugging she all but pulled her slender body free. She snapped viciously, and from her arose an odor, heavy and offensive. She was put in a wire cage and given a cigar box for a retreat.

Believing that weasels were difficult to keep in captivity we planned to take motion pictures of Stoat at once before she died of starvation. As a subject she was nervous and angry and had to be held by a string securely tied to her hind leg. But Stoat did not die from lack of a steady diet of fresh blood. She accepted English sparrows and starlings at once, and ate without hesitation. So, within a comparatively short time, she had become accustomed to her surroundings, and we had opportunity to learn a little about weasel nature.

When I was a small boy I read a story about a weasel that was so forcefully written that I developed a sincere dread of weasels, fearing them far more than animals a hundred times their size. For years I have thought of a weasel only as a blood-thirsty, destructive killer, dreaded by all creatures. Imagine my surprise and delight at finding that Stoat was eager to play! Like a kitten she would romp about, chasing the end of a string, or pulling at some object which was dragged in front of her. A crumpled piece of paper drawn noisily over the screen wire excited her greatly, and she pursued tirelessly, often running or jumping actually upside down on the wire of the top of her cage. She liked especially to play with the tails of weasel pelts dangled before her.

When Stoat ventured from her cage she moved cautiously, carefully sniffing the air and her path of progress. At such times a strange noise frightened her greatly, and at a tap of the finger on a board, or the sound of "K" spoken softly, she would dash back to her cage, into her cigar box, and be out again before she seemed to be in! Sometimes, when frightened, she sprang straight up, or backwards. She moved like lightning.

ON THE ALERT

Strange noises or odors attracted her, however, and she could not long remain quietly in her den, but came boldly forth, following her former trail rapidly until she arrived at new territory. As she crept along, testing each object which confronted her, she was comical indeed. On the floor she instantly darted for the dark spots under radiators or behind boxes. From these hiding places she could be lured by strings, weasel pelts, or sparrows dangled temptingly before her.

She liked to try climbing up trouser legs, and more than once started up inside, only to have her expeditions rudely terminated. While we occasionally touched her back or stroked her tail, we did not give her a chance to bite us with her sharp, narrow teeth. She hissed and snapped when she was annoyed.

While she was playing with a weasel pelt she often chuckled musically in a scarcely audible tone. She cooed amiably whenever she played with anything or anyone she liked. She enjoyed tussling with our hair when we put our heads against the cage; if she could not get what she wanted she stamped her hind feet regally. When Stoat played she was coy. If a little tired she lay flat on her belly and looked up at us like a tiny puppy, turning her bright face to one side in a very mischievous manner.

I drew some sketches of Stoat. She is extremely independent, and goes to great length in achieving her own ends. On a table we had placed stones which were to serve as a semi-natural background. Stoat attempted to crawl under these. Finding this impossible, she directed her attention toward methods of getting off the table,—of course she got off. We could not keep her on. She was not at all afraid; but did not like the bare surface or the bright light in which she was required to pose. As a result, most of the several hours given to photographing and sketching were spent in enticing her from dark places under radiators and book-cases.

Stoat seems to like me. She has not yet bitten me, though she has made an ugly pass or two. But she submits to my touching her a little, even to my taking her rigid, slender body partly in my fingers; but it is understood that intimacies go only so far.

I confess that when Stoat runs over me I feel a little fidgety; and when she nips at my neck I perspire considerably. What if she should have a slash at my jugular!

EXPLORATION

PATSY AND JACK OF HOLLYWOOD
They were brought up together, lion and poodle and are close friends and each other's severest critics

Patsy, A Social Lion

by Ethel Mason

PATSY is a lion and the pet of the movie studios, where she was brought up in company with a cat and a black poodle named Jack. She rides in an automobile like a dog, leads on a chain, and loves nothing better than to play with her owner and his visitors. But when she discovers that a person is the least bit nervous about animals, and especially about lions, she is right on her toes to torment them.

Not long ago she was playing the role of pet to a young lady in a comedy. The actress had been warned to pay absolutely no attention to Patsy, and to ignore any efforts of the mischievous young lioness to tease her. This was easier said than done, however, and the heroine of the movie was replaced with a young woman who was really fond of animals and who showed no fear of being hurt when Patsy pretended to look her over for future reference. In fact, the new heroine and the spoiled young lion became fast friends. The moral, if any, is that it is somewhat easier to find a charming young actress than to locate a lion star who is a strict vegetarian.

Living Trees for Friendship!

WOULD you like to send your friends a greeting that is different this year? Surely it would be a happy thought to give a few special friends something that is better than a card—but not much more expensive. ¶ This Guild Tree is a specially grown four-year-old Norway Spruce. Its tiny fragrant branches, its sturdy personality, its attractive green artcraft pottery container and saucer, and the neat way it is packed in a special parcels post carton, express the *extra* thought of the giver. These trees are *guaranteed*—they will grow into large trees.

These letters from users were unsolicited

From Saugerties, New York:
"The tree has been planted out of doors of course, and is growing and in very fine condition. I am enclosing an order for a few more plants."

From New York City:
"Many friends have admired them and asked about them, so I hope it has meant and will continue to mean, new friends for your organization."

From Paterson, New Jersey:
"I enclose check in payment for one dozen trees as advertised in last Sunday's N. Y. Times. The tree I had of you last Christmas was perfectly satisfactory and is now planted and apparently growing finely."

From Queens Village, New York:
"It is a beautiful tree. As I need some more shrubs or evergreens surely will turn to you for my supply."

From West Nyack, New York:
"It came in perfect condition and will be cared for. The nine original trees are growing beautifully and are a joy."

From New York City:
"The two Guild Trees I bought before Christmas are flourishing finely. One can almost see them grow. They are both a pleasure and an amusement."

A new kind of Christmas Greeting!

From Haverford, Pa.:
"The trees arrived in good time for Christmas, were in excellent condition, and were very much admired. As I gave them as favors, I have been interested in keeping in touch with the guests who were given the favors, and they are unanimous in their pleasure in watching the little trees grow."

From West Virginia:
"The trees you recently sent me arrived in excellent condition and I believe all are going to live and do well. They are fine specimens."

From Charles P. Taft, 2nd, Member of the National Council and General Board of Y. M. C. A.:
"Success to the Living Tree Guild! I know of no other organization like yours; and I am told that there are no trees grown more conscientiously."

From Paul H. Davey, Vice-President of the Davey Tree Expert Co.:
"I wish to congratulate you upon the splendid enterprise which you have undertaken to promote the planting of little trees on the part of thousands of people."

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Last year the Living Tree Guild shipped these trees to Honolulu. Six weeks later we received word that the little trees had arrived in perfect condition. Guild Trees have also been shipped successfully to England.

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NATURE NEWS AND VIEWS

The President's Visit

The daily press has told us of the enjoyment that President and Mrs. Coolidge found in their visit to Yellowstone National Park and the August 31 issue of the Nature Notes of the Park contains the story of the Presidential visit from the Nature point of view. E. J. Sawyer, park naturalist, was a member of the party, and in telling the story of the visit testifies to an active interest in wild life on the part of the President and his charming wife.

Governor Bird Lover

A. Vic Donahey, Governor of Ohio, is an enthusiastic bird lover and finds making homes for his martin and wren friends one of his favorite forms of recreation. His summer estate at Indian Lake, Ohio, is noted for its hospitality to the birds and the bird homes there are the Governor's own handiwork. He is also a lover of trees and has been long active in urging tree-planting in the State. Governor Donahey is a member of the American Nature Association.

Our Annual Shame

All the returns are in for 1926 on the forest fires of the country and they tell us that 24,300,000 acres were burned over by 91,793 forest fires. They caused a direct loss of $26,900,000, the United States Forest Service says. And what is more to the point, 72 per cent of these fires are man-caused, most of them traceable to carelessness. Protective activities were successful in confining the fires to comparatively small areas in most instances.

New Nest Site

When trees were cut to permit development at Black Point Beach, Niantic, Connecticut, a number of ospreys were dispossessed of their home-sites, according to a story in the Hartford *Times*, called to our attention by James McIntyre of that city. Nothing daunted, however, the birds proceeded to appropriate the upper crossbars of telephone poles and to erect their large nests among the singing wires. These ospreys are also reported to be quite tame and companionable.

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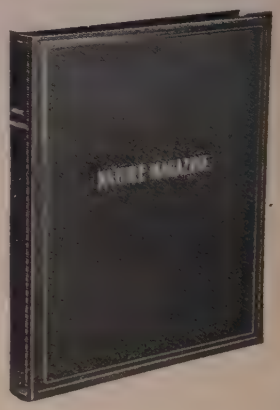

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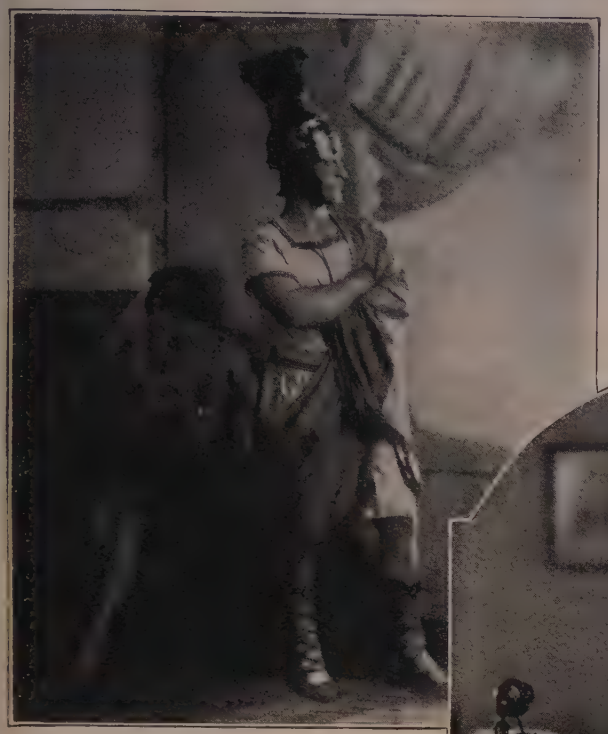

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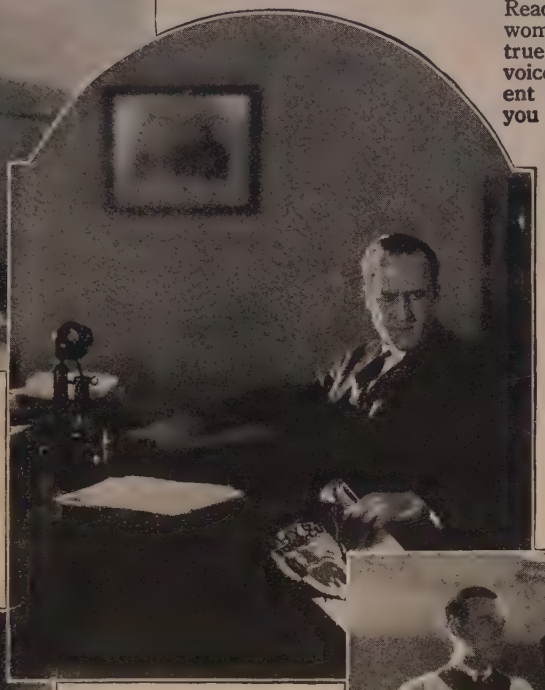

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Each 24 hours brings me a stronger and better hold on my voice. I feel like telling you of it each day when I think back to six years ago when catarrh had just about finished my hearing and voice.

I joined the Los Angeles Opera Company this Spring and we will have five Operas ready in September. It is really pathetic to see the *star pupils* from the *great voice masters* try for a place in the Company. Some very pretty, but weak, palate attacks, throat and lip attacks. I work hard all day and your silent exercises are a wonderful rest.—Bert Longtre.

Harry Lompierre Finds the "Right Way"

I wish to give credit where credit is due. The past twelve years have been spent in professional singing.

Believing that I had at last found "the right way," I cancelled an entire season's bookings to apply myself diligently to your idea.

Today my voice is completely new. Formerly, I could sing only a fair "F" (fifth line). Now I can sing high "B" flat, with a rich, resonant, manly tone. — Harry Lompierre.

Church Singer Delights Congregation

I cannot help but say "Thank God" for everything you have done for me. As I sang in church yesterday people turned to see who was singing.

I hope you will always think of me as one who has made a big success in the work I chose to do.—Carolyn Baker.

For obvious reasons the names signed to these letters have been changed. But the letters are all true and the real names of writers will be sent on request.

Singer Triumphs Over Discouragement

Did you think one year ago that I would now be singing as high as high "C"? I am very sure that I didn't.

I often think of that hopeless first letter I wrote to you and I want to thank you for the help you have given me and especially for the cheering letters at the beginning when I needed boosting along the worst way.

Hoping that you will believe me to be ever your grateful friend.—Mrs. Mary Brown.

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DEPT. 120-S - ADRIAN, MICH.

Food for Small Pets

The Questions and Answers Department of Nature Magazine has received many requests for advice on feeding small captive animals such as toads, lizards and some fish. Eunice E. Myers contributes the following suggestions as to easy sources of live food for these pets.

"Newly hatched fish may be fed on protozoa, microscopic water animals, to be procured by placing some decaying water-plants in a jar of water with a few bread-crumbs added and left in a dark corner for several days. The protozoa appear as a milky cloud in the water and are good food for fish too tiny to eat anything else. As the fish grow larger and if the season is right, mosquito larvae may be procured by filling a dish with water and bits of leaves and sticks and exposing it out of doors until the adult mosquito lays some eggs on the water. They look like tiny rafts floating around until the young larvae hatch, at which stage they can be fed to small fish. The larvae grow rapidly and make excellent food for half-grown guppies, paradise fish and other small fry usually considered hard to raise. You will be pleased to see how enthusiastic the fish are when they have this food to eat.

"Another source of live food is found in many places; if not in your own homes the corner grocer could accommodate you, I am sure. It is the common water bug or cock-roach that likes to hide near the water pipes. A trap for collecting them alive may be made by inserting a paper funnel in the top of a bottle in which a piece of ripe banana has been placed. The hole in the small end of the funnel must not be too large or the insects will escape. Of all combinations of food, ripe banana has proved the most attractive to roaches, and besides, the

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fruit may be of further use when sour by enticing fruit flies, and in addition the skin is much liked by the small water-snails that are so valuable to an aquarium. (I might add that paradise fish are very fond of these very snails.) To return to the subject the trap should be placed in a dark corner under the sink or in a cupboard where the insects are seen to congregate. They make excellent food for toads, frogs, lizards and some adult fish, though paradise fish cannot eat full-grown roaches because their mouths are small, so, to catch small roaches for them, make the hole in the bottom of the funnel only about one sixteenth of an inch across.

"Now for the fruit-flies. After removing the roaches, leave the banana in the bottle and replace the funnel. Tiny vinegar or fruit flies will come in numbers and lay their eggs so that several days later you will see their larvae or 'maggots' crawling around in the bottle. These are good food for fish when mosquitoes are not available.

"Then too there are meal-worms and enchytria or white-worms which may be purchased from dealers and raised, but unless your family of pets is very large, the inexpensive means at hand are sufficient to provide for them."

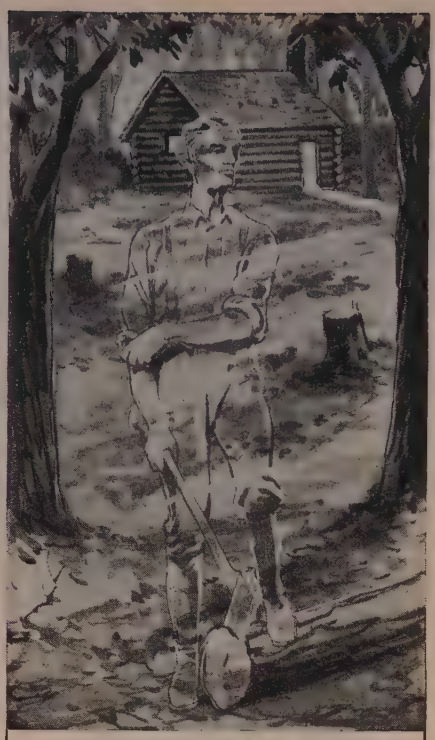
Believe It Or Not

Tabby had a reputation as a ratter around the automobile supply store of A. W. Southall of Buffalo, N. Y., having a high record of five rats a day. Then, shortly after a foray that yielded a mother rat, Tabby had a family. Two of the kittens were taken from her and she removed the remaining two to safer refuge. One morning Mr. Southall found the mother cat and the kittens at breakfast and there, cuddled with them, were two small rats, also having breakfast in approved kitten fashion. Mrs. Harold H. Hodge, who calls the story to our attention, testifies that it is true and many citizens of Buffalo came to see the strange family group.

Eagles Disappearing

That the American eagle in Alaska is disappearing, under the bounty system inaugurated in 1917 by that Territory, is the report given out by Dr. T. Gilbert Pearson, president of the National Association of Audubon Societies, who has just returned from an extended trip in Alaska.

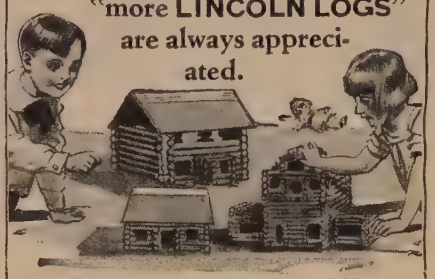
"There are many of these eagles left," said Dr. Pearson, "but from



LINCOLN LOGS

America's National Toy

For the child who owns a set of LINCOLN LOGS there is no Christmas Gift more welcome than additional sets. The natural desire is to keep on building without tearing down so that "more LINCOLN LOGS" are always appreciated.



Every American child should have a set of LINCOLN LOGS — the children who build with toys today are the future Builders of the Republic. There's a realism about LINCOLN LOGS which brings to mind the days of Lincoln, the Rail Splitter.

Boys want to build Forts, Cabins, Blockhouses, Railroad Stations, Churches, etc. Girls make Doll Houses, Chairs, Tables, Beds and other things.

Children never tire of this "All American Toy"— Design Book illustrates and shows how to build many forms of Log Construction.

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Enclosed is $——— for Logs specified. Money to be refunded if not satisfactory. Send to
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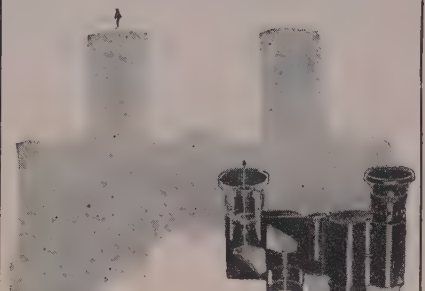

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See
Inside Front Cover

what I saw and learned on all hands it is very plain that the bird is far less numerous than a few years ago. A day spent hunting eagles between Ketchikan and Haines, a distance of eighty-eight miles, resulted in the finding of thirty-seven of these great birds. In other sections of the coast I found them scarce. Official records of the bounties paid up to August 4, 1927, as supplied me by Karl Thiele, Secretary of Alaska, showed that the feet of 40,753 eagles had been turned in for the $1 bounty."

Rochester Nature Club

Remarkable progress has already been made in developing the house and surroundings of the property purchased last March by the Burroughs-Audubon Nature Club of Rochester, New York. This property, an old farm, is being established as a bird sanctuary and wild flower preserve and a home for the members of the club. Tree plantings have been gotten under way, the house has been renovated and made into an ideal meeting place and many points of interest on the property appropriately named. The tract boasts many rare flowers and is admirably suited for the purposes of the club. William B. Hoot is president.

For the Star Gazers

Here is a helpful suggestion for the amateur astronomers. It comes from Elizabeth Hoyt Price, who avers that "during five years of teaching stars I have constantly felt that I would willingly give the half of my kingdom and the hand of the princess to anyone who would provide me with a pointer that could reach the stars."

Suddenly, she says, she discovered the pointer, "the same being a two-cell or three-cell focusing flashlight, focused down to the narrowest ray. It sends a thin, definite pencil of light straight up to the stars and you can point with it as definitely as with a pointer on a blackboard. Bright moonlight and strong city street lights dim it, but on a clear, dark night—well, try it and see."

Exchange Butterflies

Mrs. C. W. Harris of R 2, Box 188, Madison Heights, Virginia, would like to exchange butterflies with other collectors in the United States and abroad. Mrs. Harris and her two children have been building up a representative collection and would like to get in touch with fellow members who have similar interest.

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4 Prisms

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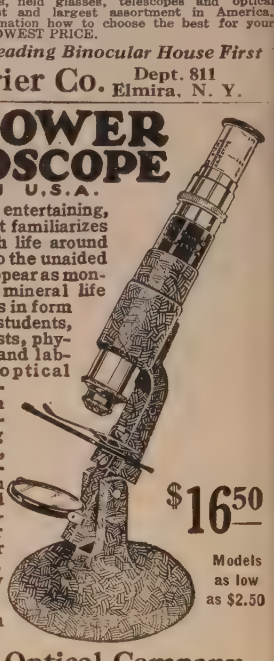

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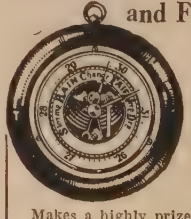

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And the Beaver Laughed

Seven years ago two pairs of beavers were installed in Harriman State Park. They were prolific and the progeny kept the game warden busy breaking up unwanted dams near Kanawauke Lakes. All means were tried to discourage the beavers and make them seek a new site, every time the busy fellows rebuilt their dams and made the unwanted small ponds. Finally the chief game warden efficiently levelled the dam and set up a scarecrow of blue denim stuffed with brush and ferns. A day or two later the scarecrow was missing and the dam was rising again. There was the individual who was supposed to intimidate the beavers built neatly and firmly into the structure of brush and mud.

Fire In Cat's Eyes

Under what conditions do cat's eyes shine at night? Do they shine regardless of any light and in an absolutely dark place? J. M. Hitchings of Grinnell High School, Grinnell, Iowa, asked these questions of one of his classes after he had begun to wonder himself. Most of the students were sure the eyes would shine in darkness, but agreed that it would be easy for a mouse to make a getaway if this were true. So volunteers were called for to seek the truth and the report to the class the next day was that Old Tom in a completely dark room had no eyes "like balls of fire" to warn the marauding rat.

Moving Day for Chipmunks

Miss Anne Morehead of Tall Timbers, Maine, an eleven year old, sends us the following:

There is something I would like to tell you. We have had a chipmunk in between our two fireplaces—she had a lot of babies that we knew nothing about till today. The chipmunk had been there for years and the other day when I was sick in bed she came out of the wall and went to the other side of the room and sniffed around and went back again. Then today as I was making my bed I heard the chipmunk in the wall and as I looked out I saw her taking what I thought was a mushroom in her mouth. When she came back I noted that she went through a hole in the logs and when she came out again I saw in her mouth instead of a mushroom a little baby chipmunk. Then I called my mother and we waited until she came back. She came out again with another

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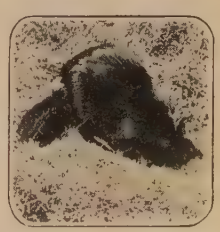
Eastman Safety Film (16 mm.) in the yellow box, used in Filmo camera, is obtained at practically all stores handling cameras and supplies. First cost includes developing and return postpaid to you.

Your Filmo Projector then brings back the outdoor life you have captured. In your most comfortable chair at home you can see the woods, fields and their inhabitants *in natural motion* on your wall or screen. Clear, brilliant pictures as beautiful as those shown in theatres. For Bell & Howell cameras and equipment are also used in making nearly all the featured theatre movies. Ask your dealer for details and Filmo demonstration.

Write for descriptive booklet "Filmo—Home Movies of the Better Kind." Mention Pillsbury, Tolhurst and Ditmars Series to receive illustrated circulars on these wonderful Nature films.



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baby, and then mother had to go. Then the chipmunk came back again and I went out on the porch where I could see her very well as she had to climb on the railings to get up in the hole. When she came down with the baby she came within two inches of my legs. Then she paused and went on again. I saw that she went up in a tree and probably went into some hole. I ran to tell mother and we watched, but the chipmunk did not come back again. We cannot imagine why she went away.

Wise Wood Ducks

We moved into the woods some years ago and cut only enough trees to set in the necessary buildings and get around, writes Margaret P. Schmidt of Stanley, Wisconsin. Wishing to interest the children in Nature I taught them about the plants and wild life in the woods. They were always bringing in something to show me, or to keep for a pet. Sometimes strange things happened.

Once they brought in several very small wild wood-ducks. The mother duck and part of the flock luckily escaped their clutches. In those days our house was far from finished. Our front hall had patent lath on the walls, but was otherwise unfinished. There was a window about four feet from the floor which was usually open. The children decided that this hall would be the best place for the little ducks until they could be tamed and taught to eat. A few days afterward two had disappeared. Careful search was made for rat holes, but there were none. The ducks could not fly, but they were certainly gone. Next day two more had disappeared, so a close watch was set at the glass door of the living room. The great mystery was solved. These supposedly helpless little fellows were climbing up the wall, using their feet, tail and wings in the grooves and so reaching the window and freedom. It was a comical looking performance, and we were much amused. It was only six feet to the ground and they vanished into the nearby woods. We let them go, hoping that their surprising instinct led them to the creek and their mother.

In The Wren House

Leon P. Thomas of Drexel Hill, Pa., always replied in the negative, he says, when asked whether young wrens return to the nesting box at night. Now he qualifies the negative,—but here is his report on his wren experiences of the June past:

"The racket going on in one of our

Two Million American Homes Are Childless!

Ancient civilizations laid a curse upon the barren woman. Now comes a physician who startles us by saying that the male is at fault in half the cases of sterility. Dr. Samuel R. Meaker further asserts that one of every ten marriages in America today is sterile. Read his illuminating article in HYGEIA for November. It is typical of the outstanding features that appear regularly in the health magazine of the American Medical Association.

The Greek That Doctors Speak

If you've ever looked inside a medical dictionary or tried to decipher a prescription, you'll appreciate "The Greek That Doctors Speak," a most informative HYGEIA article on the wherefore of the doctor's language.

The Unloved Child

The problem of the child who is unwanted or who imagines himself unwanted is expertly discussed by Dr. Walter Beran Wolfe, associated with Alfred Adler of Vienna and doing important work in psycho-clinics . . . in the same issue.

As if these major articles weren't enough for one number, there will be *Breakfast Food Facts, Cancer and New Growths, It May Be Your Teeth, Meet Dr. Sunshine,* and others. Then there are the answers to health questions, editorials, book reviews, a children's story, photographs, and clever sketches.

Here is a thought: *Each issue of* HYGEIA *contains just as many excellent features. Why not read it every month for your health?*
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As for travel, the South African Government Railways are internationally famous for comfort, speed, safety, convenience, dining and sleeping car service.

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wren houses, was daily becoming louder and there was every indication that at any time now, the young ones would be making their test flights.

"On Saturday morning, instead of the incessant chatter coming from the interior of the box it seemingly was coming from all directions in the high hedge in the rear, and I knew the young were on the first stage of their journey in this big, big world.

"It had always been my experience with wrens that once the young left the nest, the mother soon took them to parts unknown and little opportunity was offered to study them. Happily, this little mother is content with her present surroundings and they have been with us now for four days.

"It has been my privilege to watch them daily and the energy and patience of the parent bird is almost beyond belief. On the first day (Saturday) by short flights and jumps, the little ones travelled a distance of 75 feet from their former home, through hedge and shrubs, where they rested for the night. The following morning (Sunday) by nine o'clock, they had returned by a rectangular course, a distance of 150 feet and during the remainder of the day made an additional fifty foot trip to return at dusk to a small cherry tree in the yard. In this tree was another wren house, unoccupied, and on the roof of this house, with much scolding and many a moth, the mother finally corralled all the young ones. I was now able to count them—there were four. There I expected to see them settle for the night, for I was sure after that Sunday picnic the whole family was ready for bed. What was my surprise then, to see the mother go in the house, poke her head out and 'say something.' She must have said something for I was soon convinced by her actions that she was going to get the family in the box. It was quite cold and windy on that evening and she no doubt felt the need of shelter. Sure enough, one finally slid down the side and entered the hole—then another. The third and fourth found more difficulty and there was many a tumble to the ground and a scampering up the tree again before all four were safely housed. It was during this tedious procedure that Daddy wren, whom I had not noticed all day, appeared and seemed to stay inside the house to keep the young ones there, as one by one they entered, while the mother remained outside.

"The same programme was followed the next day. After a day in the shrubs and hedge, the young were led back to the box for the night. It seemed this evening that number four must have heard something of 'Plucky Lindy.' He had made several success-

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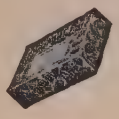

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IRIS Your choice 10 for $1.00, Labeled. One or more each: Attraction, A. Victor, Brittanicus, Crimson King, Eldorado, Fairy, Frederick, Gerda, Her Majesty, Ingeborg, Khedive, Kochii, Lohengrin, Mandraliscae, Miralba, Mrs. Darwin, M. Du Sible, Niebelungen, Parisensis, Perfection, Quaker Lady, Salar Jung, Sans Souci, Spectabilis, Teresita, Walneri.

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ful flights from the foot of the hedge to the tree, some twelve or fifteen feet, and was disposed to take the air regardless of weather conditions. Once, while he was on the roof of the little house, the mother bird rushed at him and pulled him off, landing him on the ground. This was the first time I had seen other than moral suasion used.

"On the fourth day out, they did not return to the box but were seen flying among the branches of the taller trees. A few days more and they will be able to make the highest branches."

A Crow Orator

A distinguished German physicist, Professor Walther Gerlach of the University of Tübingen, has made an interesting observation of what he believes was a "town meeting" of crows. He describes the occasion in a letter to the Berlin scientific periodical, *Die Naturwissenschaften.* In four trees outside the windows of his laboratory in the small college town, Professor Gerlach has often observed the crows of the neighborhood to congregate of mornings, with the continual chatter and raucous cries for which these birds are famous. On the morning of March 2nd, of this year, at about six o'clock, the birds gathered as usual. Suddenly, Professor Gerlach reports, all the birds fell silent. Then one bird began what the Professor says that he cannot describe otherwise than as a speech. This one bird chattered; all the others were silent. This lasted about half a minute. When the feathered "speaker" had finished, the general chatter slowly recommenced but lasted only a short time. Then followed another general silence and another solo "speech" by the one bird. This was repeated five times, after which the whole crowd of birds flew away, leaving only four stragglers. They have not been seen again, evidently having departed on their usual summer migration. "Can one think otherwise," Professor Gerlach writes, "than that we have here to do with a popular assembly of a crow organization, in which the President spoke in order to issue his orders for the flight to the summer feeding grounds?"

Urges Reforestation

At its recent state convention in Monticello, New York, the National Life Conservation Association adopted a resolution actively urging reforestation not only as essential in building up timber assets but for its value in the preservation of bird life. The resolution urged citizens of New York to avail themselves of the opportunity of purchasing young trees from the Conservation Commission at a nominal figure per thousand.

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Questions and Answers

The American Nature Association will be glad to answer each month such questions as its members ask about Nature

NOTE: Only a very few of the many questions received in this office are answered in this column. Many require too long replies to be included. All questions are, however, answered by mail without delay and those of general interest are printed. We have previously stated that all inquiries should be accompanied by the names of the writers and their addresses. We are holding in this office two letters, one from F. W. S. mailed in Los Angeles, California, and one without any signature but coming from Woodland, Washington. Both will be answered immediately by mail if the writers will inform us as to name and address.

QUESTION: *Would greatly appreciate some advice on balancing my aquarium which holds about eight gallons of water—the number of fish, number and kinds of water plants, snails, and anything else necessary.—Mrs. F. E. W.*

ANSWER: We believe that there are no very definite rules about balancing an aquarium. One small or medium gold fish to a gallon is usual, and the plants should be numerous enough to afford some shelter for the fish, also to present a rather green appearance when viewed across the room. The red snails usually kept in aquaria will reproduce, and the fish will usually keep down any overabundance.

QUESTION: *From the bark of what tree do the Indians make medicine?—C. C.*

ANSWER: The bark, twigs, and roots of a great variety of trees and other plants were used by the Indians as medicine. Cinchona bark, from which quinine is made, was originally used by the Indians of South America.

QUESTION: *Is "Wandering Jew" harmful to fishes in an aquarium? It is the only plant I have in my aquarium and every month or so I lose a fish.—Mrs. W. C. R.*

ANSWER: We have never heard that "Wandering Jew" was injurious, but do not know that it is generally used in aquaria.

QUESTIONS: *What kind of pine tree grows in Custer County, Montana, and are pitch pine and yellow pine the same?—C. M.*

ANSWER: It is thought that the yellow pine, *Pinus ponderosa*, is the only species growing in Custer County. In the nearby Bighorn Mountains occurs the lodgepole pine, *Pinus contorta*, which here reaches its eastern limit in this region. The pitch pine, *Pinus rigida*, is an eastern species, ranging from New Brunswick to Georgia, and west to Kentucky.

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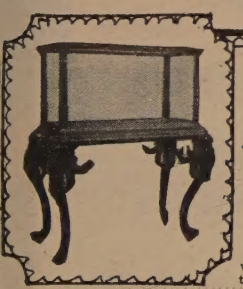

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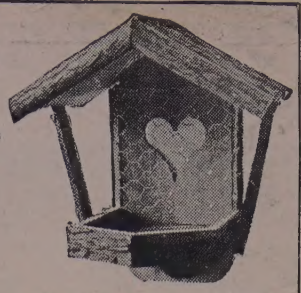

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For Memory's Sake

A TREE

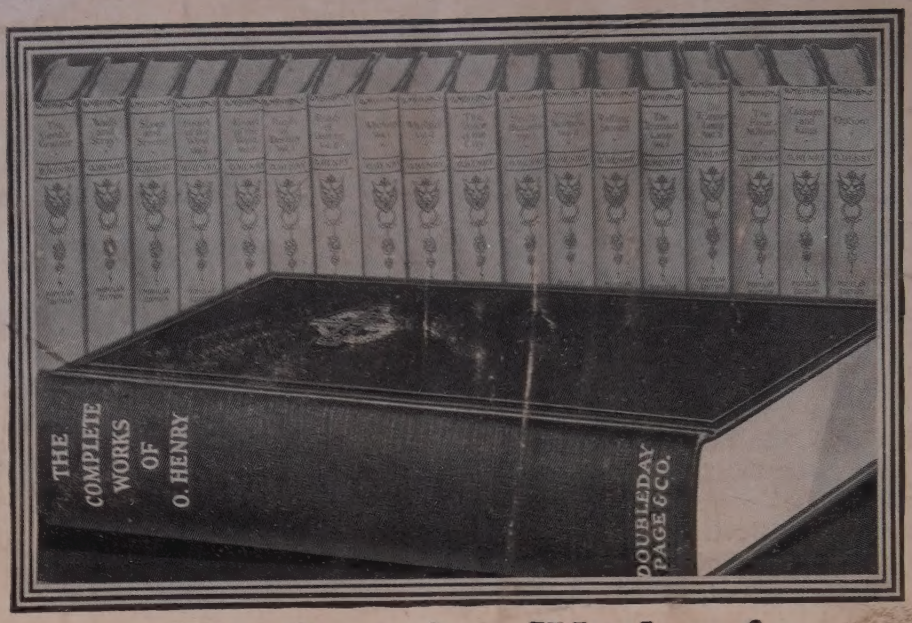
FOR remembrance what finer thing than a tree now that planting time is at hand again? The tree is the living memorial and it is safe to say that Gene Stratton Porter would wish for no finer mark of remembrance than the pine (upper right) planted in the Hollywood Bowl by Princess Who-Shon-No and Chief Thunder Bird under the auspices of the American Reforestation Association. In the lower left is another example of a memorial tree for it shows the placing at Chavamac, France, of a tree from

Mt. Vernon, the home of George Washington. In the center is a unique memorial tree. It reminds one of the Christmas spirit the year 'round. This tree is at Sacramento and was placed by the Lions Club as the official community Christmas tree. The tree was taken from the slopes of the Sierra Nevada Mountains near the point where gold was found. Fred J. Johns, district governor, and C. E. McLaughlin of the Lions Club wielded the shovels.

Tree planting lends itself to any event and the American Tree Association of Washington will be glad to send you tree planting suggestions and application blank for membership because there are no dues. The only way to join this tree planting army is to plant a tree and register it on the Association's honor roll. Make your plans to enlist in the tree planting army. There are many reasons for planting a tree but after all perhaps the best one is the tree itself. It becomes a constant reminder of him who did the planting.

The Unfinished Story

The girl got $6 a week—and was lonely. "Piggy"—you know his kind—was waiting downstairs. He knew where music and champagne could be had. But that night she didn't go. That was Lord Kitchener's doing. But another night—O. Henry tells about it in one of his inimitable stories.



The Moth and the Bright Flame

For the first time—this girl—starved of pleasure and of pretty clothes—looked into the dance hall, yellowed, lighted and noisy—but gay—gay and filled with girls and men—who to her loneliness looked good. That night she went—and then—but let O. Henry tell you the rest of the story.

Finish This Story For Yourself

New York had seemed so wonderful—art had seemed so big—but New York turned a cold shoulder—art proved hard and bitter. Alone in a big city, at the end of her resources, she was too weary to cry. This special day she went out to seek—not glory or fame—but just for something to eat. She found—but let the story be told by O. Henry.

When the Police Cut In

Bright and sunny and joyous New York looked to them. Then, on this first gorgeous day of their marriage, across their path there fell the shadow of the police, black, grim. To the man it seemed as though the sun had set forever on the promise of life. But the girl knew better. And so will you when you read this romance of everyday life by O. Henry.

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NO ONE else ever found such fascinating, poignant stories to tell, or told them with such sympathy and humor—the kind of humor that smiles at life itself, mingles your amusement with your tears, and plucks at your heartstrings.

Short, pointed, witty—sprinkled with vivid slang—and always carrying the punch of that unexpected twist at the end, O. Henry's tales always leave you gasping with delighted surprise at the unforeseen climax. And no matter who the characters are—shop girls, hoboes, actors, policemen, thieves, clubmen or stenographers—O. Henry lays bare their souls, and makes your heart beat in sympathy and understanding. No wonder millions have become "O. Henry fans."

And now these stories—over 270 of them—every one the master ever wrote—have been collected into one volume of nearly 1400 pages, printed on the new opaque thin paper, beautifully bound in cloth; although the type used is larger than ordinary newspaper type, the volume is only 1½ inches thick! And the price is only $2.98.

No one knew better than O. Henry how to hold the reader in suspense. With a glow of pleasure you will breathlessly read on to the surprising climax of "A Municipal Report" or "The Gift of the Magi." With increasing dread you will await the tragic conclusion of "The Furnished Room." And you will suddenly explode with mirth over the topsy-turvy finish of "Jeff Peters as a Personal Magnet." O. Henry never wrote a poor story! You will compare them by saying "one is better than another." This volume offers a feast of reading fit for the gods.

Do You Know O. Henry's New York?

It was the big town of pre-Volstead, pre-war days. Here his best work was done, and here he loved best to wander o' nights, like the good caliph Haroun al Raschid, in search of adventure. Here he met "Fuzzy," the dilapidated gentleman, being sent home in the millionaire's car—"Mazie" who was "eighteen and a saleslady in the gent's gloves"—and dozens of others—now all vividly alive forever in his brilliant pages. O. Henry knew and loved his New York well. He waved a wand over its sordid realities and it became a city of supreme mystery and romance.

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She had gone to change into her traveling dress. A few moments later he found her in her room—the woman he had just made his wife—and his best friend—what would you have done? What did he do?

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When the Rattlesnake Struck!

Judge—When you sent me up for four years, you called me a rattlesnake. Maybe I am one—anyhow you hear me rattling now. One year after I got to the pen, my daughter died of—well, they said it was disgrace and poverty together. You've got a daughter, Judge, and I'm going to make you know how it feels to lose one. I'm free now, and I guess I've turned rattlesnake all right. Look out when I strike.

Yours respectfully,
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